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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of September 1974

Examiner affirmed	201
Examiner affirmed in part	26
Examiner reversed	79
Total	306

Time for Filing Opposition to Marks Published in the September 10 and 17, 1974, Issues of the Official Gazette

It has come to the attention of the Patent Office that there was a delay at the Government Printing Office in mailing the Trademark Section of the OFFICIAL GAZETTE for September 10, 1974 and for September 17, 1974 to a large number of subscribers. The Patent Office was further informed by the Superintendent of Documents, Government Printing Office, that the September 10, 1974 and September 17, 1974 issues were eventually mailed to all subscribers.

In view of the delay in mailing, the marks published for opposition in the issues of the Trademark Section of the OFFICIAL GAZETTE for September 10, 1974 and September 17, 1974 are hereby republished by reference to those issues. Accordingly, the date of publication of those marks under Sec. 12(a) of the Trademark Act of 1946 for the purpose of opposition is deemed to be November 5, 1974, the date of this issue. The opposition period for the marks in those issues will end on December 5, 1974. Oppositions filed before November 5, 1974 will also be acceptable in view of the first publication of the marks on September 10 and on September 17.

RENE D. TEGTMEYER,
Oct. 15, 1974. *Assistant Commissioner for Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,463,280, Kaehni and Kaehni, SPECTROSCOPE GRATING HAVING SPACED ZONES OF DIFFRACTION LINES, **filed** Apr. 23, 1969, D.C. Md. (Baltimore), Doc. 70–381–N, *Frank J. Kachni and Marie Kachni* v. *Edmund Scientific Co. and Norman W. Edmund.* Final order of judgment dismissing complaint and entering judgment in favor of the defendants against the plaintiffs, May 24, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–382–N, *Frank J. Kachni and Marie Kachni* v. *The May Company.* Order of Court dismissing with prejudice the complaint, May 16, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–383–N, *Frank J. Kachni and Marie Kachni* v. *W. T. Grant Company.* Order of Court dismissing with prejudice the complaint, May 16, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–384–N, *Frank J. Kachni and Marie Kachni* v. *The Higbee Company.* Complaint dismissed with prejudice and judgment entered on behalf of defendant against the plaintiffs and Edward I. Stillman, May 16, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–385–N, *Frank J. Kachni and Marie Kachni* v. *S. S. Kresge Company.* Complaint dismissed with prejudice, May 15, 1974. **Same, filed** July 25, 1969, D.C. Md. (Baltimore), Doc. 70–386–N, *Frank J. Kachni and Marie Kachni* v. *F. W. Woolworth Co.* Order of Court dismissing with prejudice the complaint, May 16, 1974. **Same, filed** Apr. 23, 1969, D.C., Md. (Baltimore), Doc. 20691–N, *Frank J. Kachni and Marie Kachni* v. *Jewelarama, Inc.* Final order of judgment dismissing the complaint and entering judgment against plaintiff, June 4, 1974. **Same, filed** Apr. 23, 1969, D.C. Md. (Baltimore), Doc. 20692–N, *Frank J. Kachni and Marie Kachni* v. *Jeri, Inc.* Final order of judgment dismissing the complaint and entering judgment against the plaintiff, June 4, 1974.

2,685,536, Ransburg and Starkey, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; **2,704,417,** same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; **2,893,893,** W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; **2,893,894,** E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING, **filed** Mar. 27, 1974, D.C.N.J. (Newark), Doc. C–74–435, *Ransburg Corporation* v. *Ducane Heating Corporation.* **Same, filed** Mar. 27, 1974, D.C.N.J. (Newark), Doc. C–74–436, *Ransburg Corporation* v. *Baylis Industries, Inc.* **Same, filed** Mar. 19, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–665, *Ransburg Corporation* v. *Progress Manufacturing Company.*

2,702,829, M. F. Chapel, STORAGE BATTERY CELL PLATE INTEGRATOR, **filed** Jan. 24, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–189–F, *Milton F. Chapel* v. *Gould Incorporated.* Filed plaintiff's notice of dismissal entered May 17, 1974.

2,777,926, M. E. Bourns, VARIABLE RESISTOR, **filed** May 21, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–111, *Bourns, Inc. and Marian E. Bourns* v. *CTS Corporation.*

2,794,417. (See 2,685,536.)

2,802,760, Derick and Frosch, OXIDATION OF SEMICONDUCTIVE SURFACES FOR CONTROLLED DIFFUSION; **2,986,610,** J. Maurushat Jr., ALARM AND TEST EQUIPMENT FOR CARRIER SYSTEMS; **3,006,067,** Anderson and Christensen, THERMO-COMPRESSION BONDING OF METAL TO SEMICONDUCTORS AND THE LIKE; **3,066,052,** B. T. Howard, VAPOR-SOLID DIFFUSION OF SEMICONDUCTIVE MATERIAL; **3,087,239,** R. P. Clagett, METHOD OF BONDING LEADS TO SEMICONDUCTIVE DEVICES; **3,102,230,** D. Kahng, ELECTRIC FIELD CONTROLLED SEMICONDUCTOR DEVICE; **3,138,670,** Maurushat and Newell, AUTOMATIC TEST EQUIPMENT FOR MULTITERMINAL COMMUNICATION SYSTEMS; **3,206,670,** M. M. Atalla, SEMICONDUCTOR DEVICES HAVING DIELECTRIC COATINGS; **3,242,006,** D. Gerstenberg, TANTALUM NITRIDE FILM RESISTOR, **filed** May 15, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3 74–444–D, *Western Electric Company, Incorporated* v. *Rockwell International.*

2,893,893. (See 2,685,536.)

2,893,894. (See 2,685,536.)

2,986,610. (See 2,802,760.)

3,006,067. (See 2,802,760.)

3,066,052. (See 2,802,760.)

3,087,239. (See 2,802,760.)

3,102,230. (See 2,802,760.)

3,138,670. (See 2,802,760.)

3,173,990, R. P. Lamons, FOAM-DIELECTRIC COAXIAL CABLE WITH TEMPERATURE-INDEPENDENT RELATIVE CONDUCTOR LENGTH, **filed** May 23, 1974, D.C. Conn. (New Haven), Doc. N–74–124, *Andrew Corporation* v. *Cable Wave Systems, Inc. et al.*

3,206,670. (See 2,802,760.)

3,219,261, N. Laing, CROSS-FLOW FAN ROTOR SUPPORT MEANS; **3,305,665,** same, FORCED CIRCULATION ELECTRIC HEATER EMPLOYING CROSS-FLOW TYPE FAN; **3,308,268,** same, PORTABLE HAIR DRYERS; **Re. 25,365,** B. Eck, FANS, **filed** Mar. 1, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c582, *Illinois Fan Corporation* v. *Sperry Rand Corporation.*

3,242,006. (See 2,802,760.)

3,287,063, A. S. Nicholas, RETRACTOR HOUSING, **filed** May 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 75c1486, *U.S. Industries, Inc.* v. *Gateway Industries.*

3,305,189, Butler, Jr. and Pierce, WEB SUPPLY APPARATUS, **filed** May 22, 1974, D.C., N.D. Ill. (Freeport), Doc. 74c35, *Butler Automatic, Inc.* v. *Martin Automatic, Inc.*

3,305,665. (See 3,219,261.)

3,308,268. (See 3,219,261.)

3,428,333, V. E. Nelson, TOW-TYPE SECTIONAL AUTOMATICALLY FOLDABLE HARROW CART, **filed** Apr. 26, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1158, *Gladys Nelson Howen* v. *Clark Equipment Company.*

3,672,969, Nobel and Ostrow, ELECTRO-DEPOSITION OF GOLD AND GOLD ALLOYS, **filed** Apr. 3, 1973, D.C.N.J. (Newark), Doc. C–450–73, *Auric Corporation, Auric of N.J. and Fidelity Electronic Plating, Inc.* v. *Lea-Ronal, Inc.* Stipulation and order of dismissal of action, May 15, 1974.

Re. 25,365. (See 3,219,261.)

Re. 27,999, Korpiun and Steeg, ELECTROPLATING BATH FOR DEPOSITING BRIGHT ZINC PLATES, **filed** May 23, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–117, *Dr.-Ing. Max Schloetter, Fabrik fur Galvanotechnik and Lea-Ronal, Inc.* v. *Railoc of Indiana, Inc.*

D. 198,858, L. E. Greenberg, SLED, **filed** Mar. 3, 1970, D.C., S.D.N.Y., Doc. 70–C–859, *Coleco Industries Inc.* v. *Empire Plastic Corp.* Filed consent judgment—defendants jointly and severally are enjoined—plaintiff's claims for unfair competition are dismissed with prejudice, entered Feb. 20, 1974.

D. 219,118, Baker and Plecia, BOAT, **filed** Feb. 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–343–LTL, *Sidewinder Marine, Inc.* v. *Wriedt, Inc., doing business as Wriedt Custom Boats.*

Disclaimer

3,332,880.—*Adriaan Kessler*, Cincinnati, and *Phillip F. Pflaumer*, Colerain Township, Hamilton County, Ohio. DETERGENT COMPOSITION. Patent dated July 25, 1967. Disclaimer filed June 10, 1974, by the assignee, *The Procter & Gamble Company*.

Hereby enters this disclaimer to all of the claims of said patent.

Disclaimer and Dedication

3,605,178.—*Edwin E. Hoffmann*, St. Paul, Minn. LION PULLING KNIFE. Patent dated Sept. 20, 1971. Disclaimer and dedication filed May 7, 1974, by the inventor.

Hereby disclaims and dedicates to the Public all claims of said patent.

Certificates of Correction for the Week of Nov. 5, 1974

P.P. 3,553	3,751,377	3,788,890	3,802,000	3,812,165	3,819,273	3,823,700	3,827,820
P.P. 3,554	3,752,744	3,789,091	3,802,102	3,812,396	3,819,334	3,823,702	3,828,146
Re. 27,967	3,753,353	3,789,106	3,802,392	3,812,548	3,819,557	3,823,813	3,828,168
Re. 28,140	3,754,932	3,789,216	3,802,402	3,812,577	3,819,582	3,823,983	3,828,171
D. 231,350	3,755,226	3,789,698	3,802,727	3,812,938	3,819,660	3,824,147	3,828,281
3,443,668	3,755,298	3,790,405	3,802,957	3,813,236	3,819,739	3,824,174	3,828,813
3,467,631	3,755,446	3,790,462	3,802,968	3,813,550	3,819,780	3,824,175	3,828,923
3,510,946	3,755,482	3,790,519	3,803,092	3,813,730	3,819,788	3,824,225	3,828,924
3,569,894	3,756,298	3,790,556	3,803,415	3,813,844	3,819,808	3,824,342	3,828,928
3,576,528	3,758,646	3,790,725	3,803,459	3,813,961	3,819,868	3,824,399	3,829,059
3,590,088	3,759,871	3,791,562	3,804,304	3,814,007	3,819,969	3,824,484	3,829,111
3,591,861	3,761,883	3,791,736	3,804,564	3,814,096	3,819,980	3,824,568	3,829,148
3,592,541	3,762,637	3,792,030	3,804,794	3,814,495	3,820,084	3,824,682	3,829,313
3,593,179	3,763,100	3,792,123	3,804,850	3,814,663	3,820,146	3,824,690	3,829,444
3,600,435	3,763,102	3,792,217	3,804,889	3,814,844	3,820,155	3,824,694	3,829,498
3,615,391	3,763,838	3,792,271	3,805,093	3,814,915	3,820,213	3,824,729	3,829,501
3,634,428	3,765,889	3,792,508	3,805,305	3,815,101	3,820,343	3,824,769	3,829,552
3,636,297	3,765,900	3,792,690	3,805,940	3,815,318	3,820,374	3,824,937	3,829,683
3,637,699	3,766,290	3,792,871	3,806,216	3,815,478	3,820,484	3,825,211	3,829,701
3,638,903	3,767,271	3,792,922	3,806,364	3,815,484	3,820,530	3,825,302	3,829,789
3,642,720	3,767,618	3,792,977	3,806,401	3,815,567	3,820,708	3,825,384	3,829,790
3,646,699	3,767,624	3,793,030	3,806,481	3,815,720	3,820,709	3,825,396	3,830,008
3,666,516	3,768,162	3,793,308	3,806,560	3,815,872	3,820,775	3,825,420	3,830,085
3,676,817	3,769,521	3,793,808	3,806,682	3,815,881	3,820,820	3,825,437	3,830,101
3,677,460	3,769,722	3,794,502	3,806,760	3,816,016	3,820,927	3,825,445	3,831,039
3,680,935	3,771,239	3,794,700	3,806,770	3,816,042	3,820,975	3,825,448	3,831,462
3,681,502	3,772,323	3,794,724	3,806,785	3,816,074	3,820,982	3,825,486	3,831,529
3,684,582	3,774,575	3,795,347	3,806,820	3,816,092	3,821,116	3,825,506	3,832,004
3,688,231	3,774,922	3,795,524	3,806,865	3,816,158	3,821,121	3,825,537	3,832,118
3,692,723	3,775,050	3,795,645	3,808,201	3,816,283	3,821,222	3,825,541	3,832,161
3,695,322	3,775,265	3,795,663	3,808,219	3,816,366	3,821,257	3,825,554	3,832,172
3,697,564	3,775,507	3,795,745	3,808,227	3,816,399	3,821,320	3,825,570	3,832,213
3,701,619	3,776,631	3,796,017	3,808,611	3,816,409	3,821,352	3,825,657	3,832,220
3,713,975	3,777,132	3,796,266	3,808,834	3,816,422	3,821,405	3,825,665	3,832,297
3,714,495	3,777,549	3,796,590	3,809,248	3,816,517	3,821,605	3,825,750	3,832,334
3,714,903	3,777,863	3,796,672	3,809,549	3,816,632	3,821,846	3,825,753	3,832,422
3,715,024	3,780,061	3,796,678	3,809,763	3,816,950	3,821,897	3,825,765	3,832,597
3,715,385	3,781,116	3,796,744	3,810,404	3,817,215	3,822,159	3,825,819	3,832,628
3,716,022	3,781,313	3,796,798	3,810,507	3,817,505	3,822,241	3,825,841	3,833,097
3,719,433	3,781,785	3,797,591	3,810,519	3,817,723	3,822,286	3,826,052	3,833,107
3,722,596	3,782,640	3,797,593	3,810,535	3,817,726	3,822,301	3,826,281	3,833,177
3,723,121	3,783,100	3,797,856	3,810,672	3,817,737	3,822,328	3,826,[illegible]3	3,833,251
3,723,208	3,783,108	3,798,230	3,810,744	3,817,931	3,822,390	3,826,717	3,833,579
3,728,149	3,783,149	3,798,236	3,810,853	3,818,020	3,822,393	3,826,729	3,833,760
3,732,360	3,783,487	3,798,247	3,810,910	3,818,142	3,822,469	3,826,872	3,834,046
3,734,851	3,784,521	3,798,427	3,810,935	3,818,225	3,822,509	3,826,966	3,834,113
3,735,805	3,784,529	3,799,247	3,810,938	3,818,244	3,822,524	3,827,025	3,834,144
3,737,397	3,784,564	3,799,771	3,811,064	3,818,257	3,822,598	3,827,031	3,834,302
3,738,480	3,784,798	3,799,935	3,811,175	3,818,341	3,822,697	3,827,132	3,834,444
3,739,958	3,784,861	3,800,098	3,811,386	3,818,559	3,822,730	3,827,203	3,834,450
3,741,808	3,785,365	3,800,743	3,811,480	3,818,587	3,822,973	3,827,204	3,834,645
3,741,930	3,785,789	3,800,802	3,811,575	3,818,769	3,823,047	3,827,225	3,834,799
3,742,367	3,785,968	3,801,346	3,811,781	3,818,777	3,823,111	3,827,420	3,835,385
3,746,338	3,786,059	3,801,582	3,811,814	3,818,880	3,823,272	3,827,520	3,835,769
3,746,881	3,786,335	3,801,832	3,811,864	3,818,991	3,823,313	3,827,555	3,835,881
3,749,928	3,787,3[illegible]3	3,801,932	3,811,996	3,819,029	3,823,542	3,827,652	3,836,574
3,750,821	3,787,383	3,801,991	3,812,103	3,819,051	3,823,658	3,827,782	

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 12, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-10-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-10-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-12-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-7-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. I. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-6-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-2-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-2-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	1-2-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-28-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-29-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-11-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,807,804 to 2,811,721, inclusive
Plant Patents..... Numbers 1,646 to 1,655, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 5, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T928,001
PROCESS FOR IMPARTING FLAME RETARDANCE TO POLYESTER FIBERS

Samuel E. Blackwell, 3624 Montclair Road, Kingsport, Tenn. 37664

Filed Feb. 9, 1973, Ser. No. 330,936
Int. Cl. D06p *5/00*
U.S. Cl. 8—17
No Drawing. 6 Pages Specification

Disclosed is a process for producing a dyed, flame retardant fabric by first contacting the fabric with a composition comprising a halogen substituted aliphatic hydrocarbon, a dye and an organic bromine-containing flame retarder, and then contacting the fabric with a superheated vapor of a halogen substituted aliphatic hydrocarbon.

T928,002
PROCESS FOR PRODUCING CRYSTALLINE ANHYDROUS SODIUM CARBONATE

David R. Delling, Green River, Wyo., and James V. Wiseman, Lafayette, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Filed June 8, 1973, Ser. No. 368,404
Int. Cl. B01d *9/02*; C01d *7/00*
U.S. Cl. 23—302
No Drawing. 16 Pages Specification

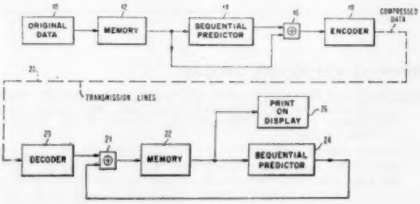
A process for producing crystalline anhydrous sodium carbonate having a very high bulk density up to 95 lbs./ft.^{3} by crystallizing anhydrous sodium carbonate from a crystallizer source material of a solution of sodium carbonate or a slurry of less than 50 percent by weight of sodium carbonate monohydrate in an aqueous solution of sodium carbonate by heating at a temperature above 228° F. in the presence of sufficient Ca^{++} so that Ca^{++} is found in the crystallized anhydrous sodium carbonate, preferably about 25 to 400 p.p.m. Ca^{++} (as calcium on a soda ash basis), including a process for the producing crystalline anhydrous sodium carbonate by converting the sodium carbonate monohydrate of a slurry of less than 50 percent by weight of, sodium carbonate monohydrate in an aqueous solution of sodium carbonate by heating at a temperature above 228° F., and (2) then separating the crystals of anhydrous sodium carbonate from the crystallizer source material preferably while they are at a concentration of less than 50 percent by weight.

T928,003
SEQUENTIAL LEARNING PREDICTOR FOR AN IMAGE COMPRESSION SYSTEM

Lalit R. Bahl, Yorktown Heights, N.Y., Daniel I. Barnea, Tel Aviv, Israel, and Hisashi Kobayashi, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 365,335, May 30, 1973. This application July 23, 1973, Ser. No. 381,950
Int. Cl. H04n *7/12*
U.S. Cl. 235—154
10 Sheets Drawing. 26 Pages Specification

A system is disclosed for compacting digital image data by means of predictive coding. The prediction decision rule is developed by a heuristic sequential learning process from a sample image data set.



A large set of two dimensional image points represented in binary form is processed in order to generate a prediction decision tree structure. The decision tree is stored within the predictor memory, then, each image point taken from a set of data that is to be compressed, is predicted in accordance with the stored prediction tree structure. The predicted value is then added, modulo-two, to the actual binary value of the image point. The resulting output of the modulo-two addition is then compressed by conventional means into data that is transmitted to a receiving unit. The receiving unit contains both a decoder for expanding the data, and an inverse predictor for creating a data pattern representative of the image that was transmitted.

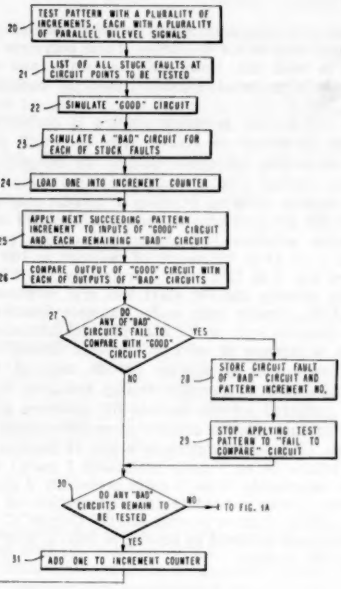
T928,004
SYSTEM FOR REDUCING THE NUMBER OF INCREMENTS IN A BILEVEL ELECTRICAL SIGNAL TEST PATTERN FOR NON-LINEAR CIRCUITS

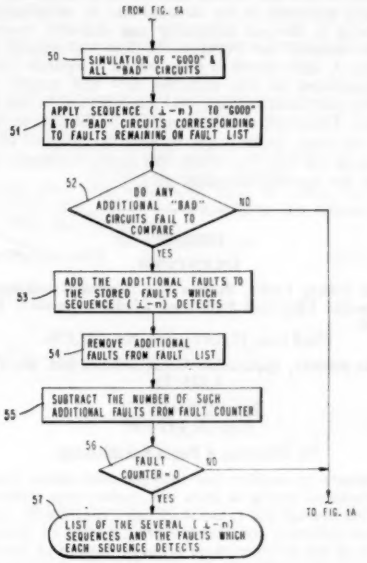
Robert G. Carpenter and Eric Lindbloom, Poughkeepsie, and Maurice T. McMahon, Jr., Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

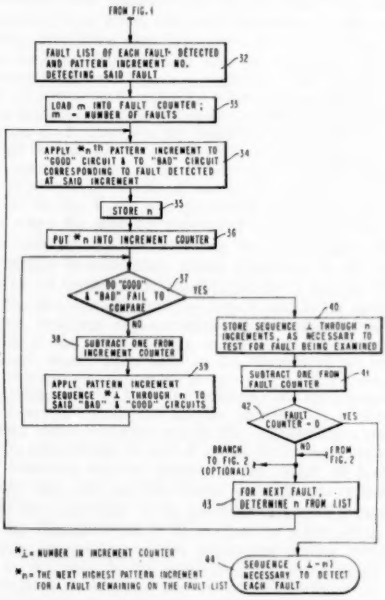
Continuation of abandoned application Ser. No. 235,485, Mar. 17, 1972. This application Oct. 24, 1973, Ser. No. 409,123
Int. Cl. G06f *11/00*
U.S. Cl. 235—151.3
5 Sheets Drawing. 21 Pages Specification

A system involving the use of fault simulation for reducing the number of increments in a bilevel electrical signal test pattern for a non-linear integrated circuit. First, for each "stuck" fault to be detected by the reduced pattern, the number of the pattern increment on which said fault is detected in the original pattern is determined. Then, for each stuck fault, the pattern increment on which the fault was detected in the original test pattern is applied to a "good" circuit computer simulation and a "bad" circuit computer simulation representative of said fault. If there is a "fail to compare," the applied pattern alone is sufficient to detect the fault. However, if the out-

puts from both simulations compare, an increment sequence consisting of the increment next preceding the previously applied increment followed by the applied increment is reapplied to the good and bad simulations, and the procedure is repeated, each time adding the next preceding increment to the sequence until a fail to compare is achieved. Such a sequence is determined for each stuck fault.


TEST PATTERN WITH A PLURALITY OF INCREMENTS, EACH WITH A PLURALITY OF PARALLEL BILEVEL SIGNALS
LIST OF ALL STUCK FAULTS AT CIRCUIT POINTS TO BE TESTED
SIMULATE "GOOD" CIRCUIT
SIMULATE A "BAD" CIRCUIT FOR EACH OF STUCK FAULTS
LOAD ONE INTO INCREMENT COUNTER
APPLY NEXT SUCCEEDING PATTERN INCREMENT TO INPUTS OF "GOOD" CIRCUIT AND EACH REMAINING "BAD" CIRCUIT
COMPARE OUTPUT OF "GOOD" CIRCUIT WITH EACH OF OUTPUTS OF "BAD" CIRCUITS
DO ANY OF "BAD" CIRCUITS FAIL TO COMPARE WITH "GOOD" CIRCUITS
YES
NO
STORE CIRCUIT FAULT OF "BAD" CIRCUIT AND PATTERN INCREMENT NO.
STOP APPLYING TEST PATTERN TO "FAIL TO COMPARE" CIRCUIT
DO ANY "BAD" CIRCUITS REMAIN TO BE TESTED
NO
TO FIG. 1A
YES
ADD ONE TO INCREMENT COUNTER

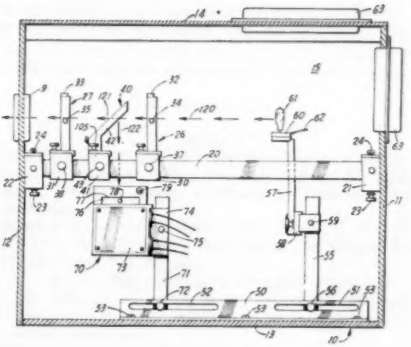

FROM FIG. 1A
SIMULATION OF "GOOD" & ALL "BAD" CIRCUITS
APPLY SEQUENCE (⊥-n) TO "GOOD" & TO "BAD" CIRCUITS CORRESPONDING TO FAULTS REMAINING ON FAULT LIST
DO ANY ADDITIONAL "BAD" CIRCUITS FAIL TO COMPARE
NO
YES
ADD THE ADDITIONAL FAULTS TO THE STORED FAULTS WHICH SEQUENCE (⊥-n) DETECTS
REMOVE ADDITIONAL FAULTS FROM FAULT LIST
SUBTRACT THE NUMBER OF SUCH ADDITIONAL FAULTS FROM FAULT COUNTER
FAULT COUNTER = 0
NO
YES
TO FIG. 1A
LIST OF THE SEVERAL (⊥-n) SEQUENCES AND THE FAULTS WHICH EACH SEQUENCE DETECTS


FROM FIG. 1
FAULT LIST OF EACH FAULT DETECTED AND PATTERN INCREMENT NO. DETECTING SAID FAULT
LOAD m INTO FAULT COUNTER; m = NUMBER OF FAULTS
APPLY *n TH PATTERN INCREMENT TO "GOOD" CIRCUIT & TO "BAD" CIRCUIT CORRESPONDING TO FAULT DETECTED AT SAID INCREMENT
STORE n
PUT *n INTO INCREMENT COUNTER
DO "GOOD" & "BAD" FAIL TO COMPARE
YES
NO
STORE SEQUENCE ⊥ THROUGH n INCREMENTS, AS NECESSARY TO TEST FOR FAULT BEING EXAMINED
SUBTRACT ONE FROM INCREMENT COUNTER
APPLY PATTERN INCREMENT SEQUENCE *⊥ THROUGH n TO SAID "BAD" & "GOOD" CIRCUITS
SUBTRACT ONE FROM FAULT COUNTER
FAULT COUNTER = 0
NO
YES
BRANCH TO FIG. 2 (OPTIONAL)
FROM FIG. 2
FOR NEXT FAULT, DETERMINE n FROM LIST
*⊥= NUMBER IN INCREMENT COUNTER
*n= THE NEXT HIGHEST PATTERN INCREMENT FOR A FAULT REMAINING ON THE FAULT LIST
SEQUENCE (⊥-n) NECESSARY TO DETECT EACH FAULT

T928,005
OPTICAL BENCH FOR A STABLE SOURCE OF RADIATION

Dale K. Cabbiness and George J. Hanggi, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 30, 1973, Ser. No. 420,745
Int. Cl. G01m *11/00*
U.S. Cl. 356—256
2 Sheets Drawing. 6 Pages Specification



An optical bench for a stable source of radiation useful in spectrophotometry comprising a box formed of

sides, a back, and a top and having a dovetail bar attached between the vertical sidewalls of the box. An opening is positioned in one of the sidewalls above the dovetail bar. A first and second lens mount is adjustably and slideably mounted on the dovetail bar. A beam splitting apparatus is likewise adjustably and slideably mounted on the dovetail bar between the first and second lens mounts. A light source is mounted on a separate mount but positioned in line with the first and second lens mounts, the beam splitter, and the opening in the box sidewall. Electronic circuitry sensitive to the light split off from the main beam is also adjustably mounted to the bottom of the box. The above unit forms a compact light source for spectrophotometry uses.

T928,006

SILENCERS

Victor Jeffrey Leslie, Potters Bar, England, assignor to Imperial Chemical Industries Limited, London, England

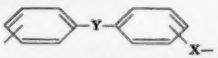
Filed Dec. 17, 1973, Ser. No. 425,276

Claims priority, application Great Britain, Jan. 26, 1973, 4,125/73

Int. Cl. B44d *1/36*
U.S. Cl. 117—97

No Drawing. 6 Pages Specification

Silencers or mufflers for internal combustion engines are disclosed having at least one surface and preferably both the internal and external surfaces, coated with a polyarylene polyether containing aromatic ether or thioether groups in the polymer chain *ortho* or *para* to at least one —SO_2— or —CO— group. Thermoplastic polyarylene polyethers useful herein generally have at least some units of the structure:



in which *y* is oxygen or sulfur or the residue of an aromatic diol such as 4,4′-bisphenol. These polymers are resistant to road salt, slush and road water and protect the underlying metal substrate even at temperatures above 200° C.

The polyarylene polyether coating is preferably applied to the silencer or muffler after the article is fabricated as welding operations destroy the integrity of the polymer coating. The polymer is applied using conventional dipping, spraying, brushing or powder coating techniques and are preferably contained in a solvent solution.

Suitable solutions for coating polyarylene polyether contain 5 to 25 g. by weight of polymer in 100 ml. of solution (i.e. 5 to 25% w./v.) preferably 10–15% w./v. Suitable solvents include alkyl and aryl sulphones and sulphoxides, amides such as for example dimethylformamide, ketones such as for example cyclohexanone. The solvent or mixture of solvents used will depend on various factors such as solution pot-life required, ventilation and solvent evaporation facility available. A particularly preferred solvent mixture for optimum shelf life of the coating solution consists of cyclohexanone (15 to 20 parts by volume preferably about 18 parts), methyl ethyl ketone (4 to 7 parts preferably 5 parts) and dimethyl sulphoxide (1 to 3 parts preferably 2 parts). A preferred curing procedure for vaporization of solvent after coating requires heating at 100° C.±20° C. for 45 to 90 minutes followed by heating at 160° C.±20° C. for 90 to 180 minutes.

REISSUES

NOVEMBER 5, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

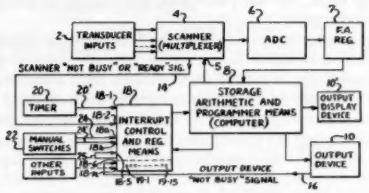
28,221
PRIORITY INTERRUPT MONITORING SYSTEM

Ralph Benghiat, Pacific Palisades, Calif., assignor to The Riley Co.

Original No. 3,221,309, dated Nov. 30, 1965, Ser. No. 130,615, Aug. 10, 1961. Application for reissue Sept. 13, 1973, Ser. No. 396,826

Int. Cl. G06f *9/00, 9/18*

U.S. Cl. 340—172.5 14 Claims



1. In a monitoring system including program means for providing different program routines each of which, by various basic steps effective in sequence, carries out a different function, the improvement in a priority interrupt system for automatically operating said routines in accordance with predetermined priority levels assigned to the respective routines, said priority interrupt system comprising: respective signaling means for generating interrupt demand signals which call for operation of said program routines; interrupt register means having for each priority level [and] *an* A bit storage means for storing a marker indicating the present or absence of an interrupt demand signal for the level involved and an R bit storage means for storing a marker indicating the current activity or inactivity of a program routine having the priority level involved; means for setting an R bit marker in the R bit storage means of a given priority level when the program routine of the priority level has been activated and for removing the R bit marker when the routine is completed, means responsive to the presence of an interrupt demand signal for a priority level and the absence of corresponding A and R bit markers in said interrupt register means for setting an A bit marker in the A bit storage means of the priority level involved; means responsive to the absence of an interrupt demand signal and the presence of an R bit marker for a given priority level for removing the corresponding A bit marker once the routine involved is activated; priority status scanning means for sequentially examining the information in said A and R bit storage means of said interrupt register means in the order of highest priority first, said priority status scanning means including means responsive to the presence of an A bit marker and the absence of an R bit marker for interrupting the program routine in progress, means for storing information on the point in the interrupted routine at which the interruption took place and initiating operation of the higher priority level routine, and means operative after completion of the higher priority level routine for resuming the interrupted program at the point of interruption thereof.

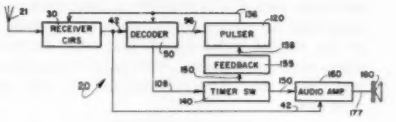
28,222
COMMUNICATION RECEIVER INCORPORATING TONE OPERATED PULSER CIRCUIT AND ELECTRONIC SWITCH

Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850

Original No. 3,651,413, dated Mar. 21, 1972, Ser. No. 861,719, Sept. 29, 1969. Application for reissue June 6, 1973, Ser. No. 367,580

Int. Cl. H04b *1/06*

U.S. Cl. 325—492 26 Claims



1. A communication receiver for receiving carrier signals modulated by at least one control tone, said receiver comprising a processing circuit for receiving the modulated carrier signals and detecting the control tone therein, a pulser circuit coupled to said processing circuit and operative to produce a series of pulses for intermittently rendering said processing circuit operative, a decoder circuit coupled to said processing circuit and having first and second outputs, said decoder circuit producing at said first output a first control signal commencing with the initiation of the control tone and producing at said second output a second control signal commencing a predetermined time after initiation of the control tone, said pulser circuit having an input coupled to the first output of said decoder circuit and responsive to the application thereto of said first control signal to furnish a continuous supply voltage for said processing circuit for an interval substantially longer than the duration of each pulse in said series of pulses, an electronic switch circuit coupled to the second output of said decoder circuit and responsive to said second control signal to provide an enabling signal, a utilization circuit having an input coupled to said switch circuit and responsive to the enabling signal to provide an output signal, and an annunciator coupled to said utilization circuit for converting the output signal into usable form.

28,223
ELECTRON BEAM DEFLECTION APPARATUS

Conrad J. Odenthal, Beaverton, and George K. Hashizume, Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Original No. 3,694,689, dated Sept. 26, 1972, Ser. No. 118,293, Feb. 24, 1971. Application for reissue Oct. 27, 1972, Ser. No. 301,631

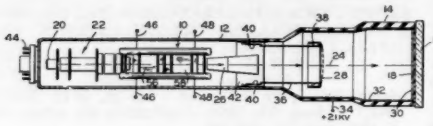
Int. Cl. H01j *25/36, 29/70;* H03h *7/30*

U.S. Cl. 315—3 22 Claims

1. An electron beam deflection tube in which the improvement comprises:

deflection means for deflecting an electron beam in said tube, including a pair of helical deflector members supported in spaced relationship on opposite sides of said beam, each of said helical members having a

plurality of spaced turns positioned successively along the path of said beam with each turn including a pair of side portions separated by a deflector portion; and



compensation means for forming transmission lines of substantially uniform characteristics with said helical members, including a plurality of compensator plates supported in spaced relationship on opposite sides of the helical members so that said compensator plates each extend across both helical members adjacent said side portions outside of said helical members.

28,224
TRANSISTOR MATRIX
Michael H. Metcalf, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Original No. 3,587,052, dated June 22, 1971, Ser. No. 770,910, Oct. 28, 1968. Application for reissue Apr. 9, 1973, Ser. No. 349,094
Int. Cl. H01h *63/33*
U.S. Cl. 340—166 R **9 Claims**

14. A transistor matrix comprising:

a plurality of transistors in a monolithic integrated circuit structure, each transistor having a collector portion, a base portion, and an emitter portion, and input terminals separately connected to said emitter portions and base portions respectively, each transistor providing a collector output when both input terminals thereof receive a predetermined input.

plural adjacent collector regions in said monolithic integrated circuit structure, said collector regions being provided by adjacent isolation regions in a semiconductor layer of said monolithic integrated circuit structure, wherein collector portions of ones of said transistors form a part of the same collector region, while collector portions of other ones of said transistors form a part of other collector regions,

ones of said base portions being disposed along said isolation regions to provide one or more transistors along each such isolation region wherein a base portion separates an emitter portion from the corresponding collector region,

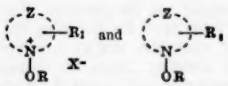
means interconnecting the emitter input terminals of said transistors in first groups corresponding respectively to first input values, said means interconnecting aid emitter input terminals comprising first conductors insulatably crossing said isolation regions and making connection only with emitter input terminals of transistors in the corresponding groups, wherein each first conductor connects emitter input terminals of not more than one transistor per isolation region,

and means interconnecting the base input terminals of said transistors in second groups corresponding respectively to second input values, each transistor being identified by a unique combination of input connections with respect to said first and second groups,

said means for interconnecting said base terminals in second groups comprising second conductors disposed in between said first conductors and connecting a base input terminal disposed in one isolation region with a base input terminal in the next adjacent isolation region of a transistor the emitter of which is connected in a different first group by a different first conductor, at least ones of said base portions being provided with a pair of base terminals, one on each side of an emitter portion, and to which said second conductors are connected in order that said second conductors may be located in between first conductors without crossing first conductors.

28,225
PHOTOBLEACHABLE DYE COMPOSITIONS
Donald W. Heseltine, Philip W. Jenkins and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original No. 3,615,432, dated Oct. 26, 1971, Ser. No. 766,307, Oct. 9, 1968. Application for reissue Apr. 30, 1973, Ser. No. 356,674
Int. Cl. G03c *1/72, 5/04*
U.S. Cl. 96—27 R **34 Claims**

1. An image-forming composition comprising [an energy-sensitive compound] *a film-forming binder and a photobleachable dye* having a formula selected from the group consisting of:



wherein:

R_1 is a methine terminated by a 5 to 6 membered heterocyclic nucleus, *containing carbon atoms and at least one heteroatom chosen from the class consisting of oxygen, sulfur, nitrogen, and selenium atoms;*

R_8 is selected from the group consisting of:

a. a methine linkage terminated by a heterocyclic nucleus of the type contained in merocyanine dyes *containing carbon atoms and at least one heteroatom chosen from the class consisting of oxygen, sulfur, nitrogen, and selenium atoms and*

b. an allylidene radical;

R is selected from the group consisting of:
a. an alkyl radical and
b. an acyl radical;
X is an acid anion; and
Z represents the atoms necessary to complete a 5- [to] *or* 6-membered heterocyclic nucleus *including the substituted nitrogen atom, carbon atoms and up to one or more other heteroatoms chosen from the group consisting of nitrogen, oxygen, sulfur and selenium atoms.*

28,226

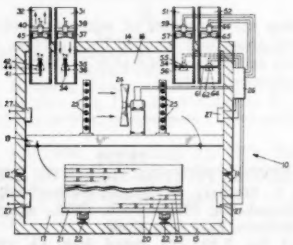
CIRCULATING AIR DRYER

Franklin W. Cook, Portland, Oreg., assignor to F. W. Cook & Associates, Inc., Portland, Oreg.

Original No. 3,659,352, dated May 2, 1972, Ser. No. 38,451, May 18, 1970. Application for reissue Nov. 26, 1973, Ser. No. 419,134

Int. Cl. F26b *21/06*

U.S. Cl. 34—191 **5 Claims**



10. A circulating air dryer including a chamber having a space for holding materials to be dried,

a reversible power-operated air mover for selectively circulating air through said space in either of opposite directions with such air moving from the exhaust side of the mover into and through said space and thence to a negative pressure area on the suction side of the mover,

one exhaust port connecting with the atmosphere and communicating with said chamber at one region which is on the suction side of the mover and at negative pressure with the mover circulating air in one direction through said space, and another exhaust port also connecting with the atmosphere and communicating with said chamber at another region which is on the suction side of said air mover and at negative pressure with the mover circulating air in the opposite direction through said space,

selectively operable power-operated fan means for producing an exhaust flow of air from said one region of the chamber to said atmosphere through said one exhaust port when said one region is at negative pressure and movement of air is in said one direction and for producing an exhaust flow of aid from said other region of the chamber to said atmosphere through said other exhaust port when said other region is at negative pressure and movement of air is in said other direction, and

means for introducing makeup air and means for introducing heat to the circulating air after such circulating air passes the region where exhaust flow is taking place and before such air enters into said space with air being circulated in either of opposite directions through said space.

28,227

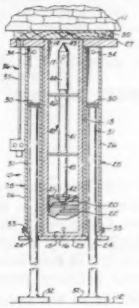
MINE ROOF PINS AND APPARATUS FOR SETTING THE SAME

Gerald W. Elders, Aspen, Colo., assignor to Lee-Norse Company, Charleroi, Pa.

Original No. 3,643,542, dated Feb. 22, 1972, Ser. No. 110, Jan. 2, 1970, which is a continuation-in-part of application Ser. No. 846,795, Aug. 1, 1969. Application for reissue Apr. 18, 1973, Ser. No. 352,278

Int. Cl. F16b *15/00*

U.S. Cl. 85—10 R **9 Claims**



1. A roof pin adapted to be pressed into a mine roof, comprising:

(a) elongate shank means having a head at one end and a pointed tip at the other end, a first portion of the shank means being of greater peripheral dimension than a second portion to provide a contact surface engageable with the roof material when the pin is pressed into the mine roof, the area of the contact surface being preselected to control the amount of surface pressure and skin friction and thereby predetermine the force required for insertion.

(b) the first shank portion, that is of greater peripheral dimension and provides the preselected contact surface area, is located ahead of the relatively reduced second shank portion in the direction of the pointed tip to provide a passage in the roof strata that is larger than the reduced shank portion.

28,228

BOOSTER CAP ASSEMBLY

Donald P. Graham, South Bend, Ind., assignor to Hercules, Inc., Wilmington, Del.

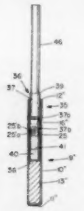
Original No. 3,640,222, dated Feb. 8, 1972, Ser. No. 787,413, Dec. 27, 1968. Application for reissue Dec. 3, 1973, Ser. No. 421,299

Int. Cl. F42b *3/10*

U.S. Cl. 102—24 R **14 Claims**

1. A booster assembly [comprising] *having* a booster unit slipped onto [a] *an elongated* cap-, or fuse-type primary initiator, comprising, as said booster unit, an elongated shell open at one end and closed at the other end, *and* from 1 to 6 grams secondary high explosive within and completely filling, a closed end section of said shell [, and the remaining section of said shell being open and unobstructed]; said primary initiator having

an external transverse cross section sufficiently less than, and correlated with, the internal transverse cross section of [said] *an* open end shell section *of said booster unit* so as to permit at least an *initiating* end portion of said *primary* initiator to be coaxially disposed within said open end shell section in [force fit] *substantially* closing relationship with said shell along substantially the entire external primary initiator surface within said *open end* shell *section and in initiating relationship with said secondary high explosive; indentation means extending*



into said open end shell section from the external wall thereof; and said booster unit [, at its] *having said* open end [,] *shell section* [coaxially] slipped [in said force fit] on to at least [an] *said initiating* end portion of said primary initiator *in force fit relationship of said indentation means with said primary initiator and* with said secondary high explosive in detonating relationship with said primary initiator [; and crimp means on the external wall of said open end shell section extending into supporting contact with said initiator therein].

28,229
β-ALKOXY-TRIFLUOROMETHYLPHENALKYLAMINES

John A. Faust, Solvang, and Melville Sahyun, Santa Barbara, Calif.; said Faust assignor to said Sahyun, doing business as Sahyun Laboratories, Santa Barbara, Calif.

No Drawing. Original No. 3,459,803, dated Aug. 5, 1969, Ser. No. 666,457, Sept. 8, 1967, which is a continuation-in-part of Ser. No. 467,759, June 28, 1965. Application for reissue July 28, 1970, Ser. No. 59,042, now reissue Patent No. 27,551, dated Jan. 16, 1973. Divided and this application for reissue Oct. 12, 1972, Ser. No. 297,100

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **1 Claim**

1. The process of reducing appetite which comprises administering to animals in need thereof an appetite reducing amount of N-benzyl-β-methoxy-β-(3-trifluoromethyl)phenethylamine or a pharmaceutically acceptable acid addition salt thereof.

28,230
METHOD OF MAKING A MINIATURE METALIZED CAPACITOR

Charles C. Rayburn, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Original No. 3,715,784, dated Feb. 13, 1973, Ser. No. 104,887, Jan. 8, 1971, which is a division of application Ser. No. 4,386, Jan. 20, 1970, now Patent No. 3,576,481. Application for reissue Aug. 29, 1973, Ser. No. 385,112

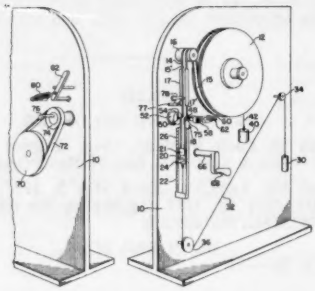
Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **5 Claims**

1. A method of winding a capacitor from a single strip of dielectric with a metalized coating on each of its sides comprising the steps of:

doubling back a central portion of said strip upon itself;

winding said doubled back portion around at least portions of each of first and second lead wire members which are separated from each other by at least three layers of said strip;



winding the remainder of said strip including its two ends about said doubled back portion, and

sealing said ends of said strip to the previously wound portions thereof.

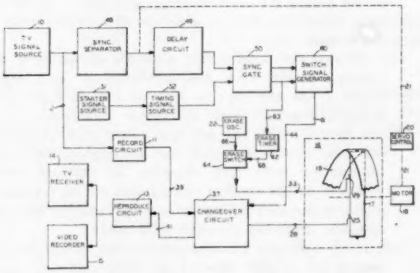
28,231
SINGLE PICTURE SELECTOR SYSTEM

Arturo E. Stosberg, Otelsinger, Switzerland, and Donald A. Horstkorta, Menlo Park, Calif., assignors to Kurt R. Machein, Palo Alto, Calif.

Original No. 3,397,283, dated Aug. 13, 1968, Ser. No. 417,677, Dec. 11, 1964. Application for reissue Feb. 2, 1970, Ser. No. 15,334

Int. Cl. H04m *5/78*

U.S. Cl. 360—35 **15 Claims**



1. An electronic system wherein a single composite television signal is recorded and reproduced and which is selected from a multiple composite television signal having vertical sync signals, said electronic system comprising: a sync pulse supply means to receive the multiple television signal and develop delayed vertical sync pulses from the vertical sync signals to occur during the blanking intervals and after the equalizing pulses thereof; a timing signal source to provide a selector signal initiated at any selected time; a sync gate connected to said sync pulses supply means and to said timing signal source to

provide a first pulse signal including the delayed sync pulses from said sync pulse supply means occurring during the selector signal, and to provide a second pulse signal including all the other delayed sync pulses from sync pulse supply means; a switch signal generator connected to said sync gate for developing a switch operating signal initiated by the first delayed sync pulse of said first pulse signal during said selector signal and terminated by the next occurring delayed sync pulse of said second pulse signal; a storage device for recording and reproducing signal composite television pictures and including a record circuit, a reproduce circuit, and transducer means, said storage device having a rotatable drum being responsive to the vertical sync signals of the multiple television signal to be rotated in synchronization therewith; and an electronic changeover circuit connected to said switch signal generator and to said storage device and including a record switch connected between the record circuit and the transducer means to allow the passage therebetween only during the switch operating signal, and including a reproduce switch connected between the reproduce circuit and the transducer means to allow the passage therebetween at all other times.

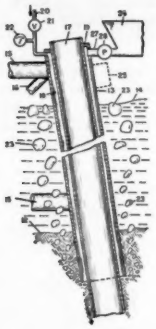
28,232
METHODS OF GROUTING OFFSHORE STRUCTURES

Max Bassett, Houston, Tex., and Horace W. Olsen, deceased, late of Houston, Tex., by Magdalene M. Olsen, executrix, Houston, Tex., assignors to C. Nelson Shields, Jr., trustee

Original No. 3,601,999, dated Aug. 31, 1971, Ser. No. 858,951, Sept. 18, 1969. Application for reissue July 11, 1973, Ser. No. 378,196

Int. Cl. E02b *17/00;* **E02d** *5/24*

U.S. Cl. 61—46 **15 Claims**



1. A method of grouting an offshore structure having at least one supporting leg including a tubular jacket extending downwardly from above the waterline to the seabed and a piling driven through said jacket into the seabed with an annular space existing between the inside of the jacket and said piling; said method comprising the steps of

a. sealing the upper end of said jacket to said piling so as to close said annular space at the upper end of the jacket;

b. introducing compressed air into said annular space at a point adjacent the upper end of the jacket and above the waterline so as to expel water from said space through the lower end of the jacket;

c. introducing fluid grouting material into said annular space at a point adjacent the upper end of the jacket and above the waterline after water has been expelled from said space as aforesaid;

d. simultaneously maintaining static air pressure in said annular space sufficient to prevent ingress of water through the lower end of said jacket while the grouting material is being introduced into said space; and

e. permitting the grouting material to set.

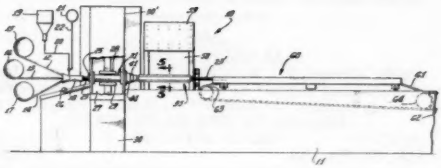
28,233
AUGMENTED CURING OF REINFORCED PLASTIC STOCK

William Brandt Goldsworthy, Palos Verdes Estates, Calif., assignor to Glastrusions, Inc., Torrance, Calif.

Original No. 3,674,601, dated July 4, 1972, Ser. No. 61,934, Aug. 7, 1970, which is a continuation-in-part of application Ser. No. 648,347, June 23, 1967, now Patent No. 3,556,888. Application for reissue July 13, 1973, Ser. No. 378,813

Int. Cl. B29c *19/02;* **B29h** *9/00*

U.S. Cl. 156—380 **9 Claims**



1. An augmented curing former comprising

a frame,

a composing die,

material supplies for said composing die, including fiber strands, thermosetting resin and hardener forming a continuous strand of impregnated stock,

a primary heating station including a pathway for said stock and comprising an electrically shielded chamber and a set of high frequency electrodes in said chamber adjacent said pathway,

a secondary hardening station comprising a finish die having a passage therethrough in alignment with said pathway, said finish die being out of the influence of said electrodes and having [a mating] *an* end in [liquid-tight] *downstream* relationship with said heating station at an exit end of said pathway,

and pull means adjacent the downstream end of said finish die adapted to engage said stock and to pull said stock from the finish die.

28,234
N-NITROSO-4,4'-BIS(2-PHENYLISOPROPYL)-DIPHENYLAMINE

Guy Bertrand, Choisy-le-Roi, and Jean Marc Maison, Paris, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Original No. 3,668,253, dated June 6, 1972, Ser. No. 70,724, Sept. 9, 1970, which is a division of application Ser. No. 757,757, Sept. 5, 1968, now Patent No. 3,573,252. Application for reissue Jan. 31, 1973, Ser. No. 328,264

Claims priority, application France, Sept. 20, 1967, 121,670

Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R **1 Claim**

1. N-nitroso-4,4'-bis(2-phenylisopropyl)-diphenylamine.

REISSUE 28,235
WITHDRAWN

PLANT PATENTS

GRANTED NOVEMBER 5, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,644
FLOWERING CRABAPPLE TREE

Henry A. Ross, Strongsville, Ohio, assignor to Cole Nursery Company, Inc., Circleville, Ohio

Filed Aug. 8, 1973, Ser. No. 386,555
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of flowering crabapple tree, *Malus cultivar*, having a distinct pendulous habit, with rounded, umbrella-like top and arching branches, an abundance of small white flower clusters during the blooming period, and an abundance of small, glossy, lemon yellow to greenish yellow fruits.

3,645
KALANCHOE PLANT

Grady Howard, Jr., Amarillo, Tex., assignor of a fractional part interest to J and L Plants, Incorporated, doing business as Howard Greenhouses, Canyon, Tex.

Filed Oct. 16, 1973, Ser. No. 406,916
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a branching and medium tall habit of growth, attractive Fern Green foliage of medium size, a uniform blooming date and fast photo-periodic response, production of a profusion of relatively large flowers which are borne moderately close to the foliage, a distinctive and attractive Crimson flower color, long-lasting qualities, and the ability to be brought into flower all year round, even under high night temperatures of summer.

3,646
KALANCHOE PLANT

James T. Irwin, Canyon, Tex., assignor to J and L Plants, Incorporated, Canyon, Tex.

Filed Oct. 11, 1973, Ser. No. 405,493
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

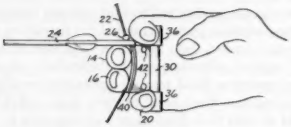
1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a highly self-branching, sturdy and compact habit of growth, but being more upright and less spreading and looser or more open than the habit of "Jean," dense, compact and attractive foliage, a larger individual flower size, with a compact flower tendency, a distinctive and attractive light pink flower color, a uniform blooming response and uniform blooming height ranging from about 10 to 12 inches, the ability to respond to photo-periodic changes, with consequent ability to be brought into bloom all year around, the ability to initiate and develop flower buds under high night temperatures when other varieties stall, and the ability to withstand northern winters better than most hybrid kalanchoe varieties.

PATENTS

GRANTED NOVEMBER 5, 1974

GENERAL AND MECHANICAL

3,845,504
ARCHER'S FINGER TAB
Gerald I. Killian, 12350 S.E. Stevens Rd., Portland, Oreg. 97266
Filed Mar. 1, 1973, Ser. No. 337,125
Int. Cl. A41d *13/00*
U.S. Cl. 2—21 **8 Claims**



1. An archer's finger tab for use with an archery bow string, comprising

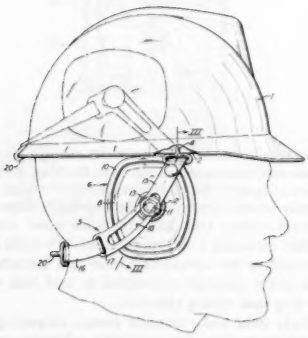
a. an elongated base member, and

b. a flexible string-engaging tab member extending forwardly from the base member intermediate the ends of the latter,

c. the tab member having a string-engaging width dimensioned to span substantially only the two middle fingers of an archer's hand,

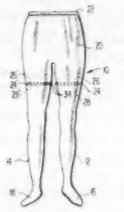
d. the end portions of the base member projecting from opposite sides of the tab member being arranged for engagement by the index and little fingers, respectively, of the archer's hand.

3,845,505
ADJUSTABLE EAR COVER ASSEMBLY FOR SAFETY HATS
Ellison L. Davison, Gibsonia, and Robert F. Menold, Monroeville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed June 28, 1973, Ser. No. 374,528
Int. Cl. A42b *1/24*
U.S. Cl. 2—209 **1 Claim**



1. The combination with a safety hat provided with a brim, a pair of protective ear covers having inner sides shaped to receive a man's ears and engage the side of his head around the ears, a headed boss projecting centrally from the outer side of each ear cover, a supporting device for said ear covers comprising three straps connected end to end and forming a closed path when attached to the hat, means located on the opposite ends of said supporting device for securing it to the bottom of the hat, the two end straps being flexible and nonelastic, the third strap being elastic and adapted to extend around the nape of the neck in engagement therewith, each of said end straps extending across the outer side of one of said ear covers and provided with a longitudinal slot receiving the adjoining headed boss, whereby the ear covers are adjustable lengthwise of the straps, and C-shaped hook means slidably mounted on said elastic strap for gripping the brim of the hat when the elastic strap and said ear covers are in a stored position above the brim.

3,845,506
PANTY HOSE STOCKING
Della Harris, 89 Kingswood St., Morgantown, W. Va. 26503
Filed Mar. 8, 1973, Ser. No. 339,139
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 R **5 Claims**



1. In a knitted panty hose stocking unit having two leg portions, corresponding foot portions, and a trunk portion integral with said leg portions, the upper extremity of said trunk portion terminating in a supporting waist band, the improvement comprising:

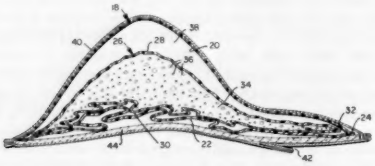
an integral, continuous circumferential band at the midthigh region of each of said leg portions, each of said bands including at least one interwoven course of nonravelling lock stitches disposed adjacent the lower extremity of the upper thigh portion of said unit for preventing the ravelling thereof when the leg portion therebelow is separated from said unit;

means carried by said bands for selectively disconnecting the leg portion therebelow from said unit, said means including a pair of abutting but not interwoven continuous circumferential courses of knitted loops and at least one waste thread connecting said loops and extending circumferentially through said band so that when said thread is removed from said band the leg portion of said unit therebelow is disconnected from said unit, said interwoven course of lock stitches preventing ravelling of the remaining upper thigh portion thereof; and a pull tab affixed to said waste thread.

3,845,507
BRASSIERE WORN BREAST PROSTHESIS

John Ashley Kirby, and Louis J. Colonnese, both of Fairfield, Conn., assignors to George C. Batcheller Co., Inc., Bridgeport, Conn.

Filed Dec. 14, 1972, Ser. No. 315,003
Int. Cl. A41c 3/10
U.S. Cl. 3—36 30 Claims



1. A breast prosthesis adapted to be worn in the bust cup of a brassiere comprising, in combination:

A. an outer air impervious bag, the front surface of which is substantially the same size and shape as the bust cup within which it is to be worn;

B. an inner air and liquid impervious bag within said outer bag containing a liquid;

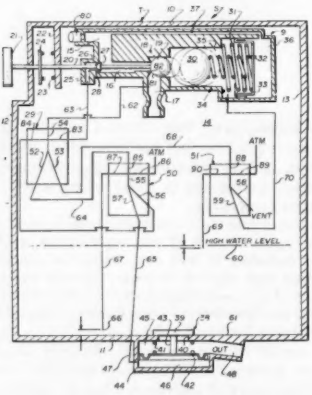
C. a valve for admitting or releasing air to or from said outer bag; and

D. means joining said inner and outer bags to each other along the top peripheries thereof.

3,845,508
WATER CLOSET CONTROL SYSTEM

Cecil D. Oglesby, Manchester, Mo., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 30, 1973, Ser. No. 346,398
Int. Cl E03d 3/00
U.S. Cl. 4—41 6 Claims



1. A system for controlling admission of fluid to a container and discharge of fluid therefrom including:

a source of fluid under pressure;

passage means arranged for conducting fluid from said source to said container;

a normally closed inlet valve having a movable closure member disposed in said passage means, said closure member including a face arranged for exerting an opening force on said closure member in response to pressure fluid in said passage means, having a lesser effective area exposed to said pressure fluid in a seated condition and a greater effective area exposed to said pressure fluid in an unseated condition;

biasing means arranged for exerting a closing force on said closure member, including a first fluid motor;

a control member arranged and disposed for transmitting an unseating force to said closure member;

a normally closed reset valve disposed in said passage means, said reset valve being opened in response to actuation of said control member;

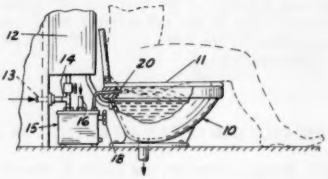
a normally closed discharge valve arranged for controlling discharge of fluid from said container including a second fluid motor arranged for opening said discharge valve and;

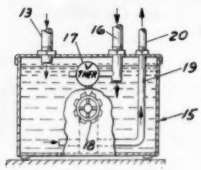
a fluid logic circuit connected to said passage means including fluidic switching gates arranged for supplying pressure fluid to said second fluid motor in response to actuation of said control member, and thereafter sequentially switching pressure fluid to said container in response to a preselected low fluid level therein, and switching pressure fluid to said first fluid motor in response to a preselected high fluid level in said container.

3,845,509
BIDET-COMMODES

Samuel L. Lieber, Shreveport, La.

Filed Nov. 3, 1972, Ser. No. 303,487
Int. Cl. A47k 3/22, 11/08
U.S. Cl. 4—7 1 Claim





1. In a bidet-commode having a water storage tank, a commode bowl and associated means for flushing water into a sanitary sewer system the improvement comprising:

a generally closed mixing chamber operably disposed adjacent said storage tank and commode bowl, said mixing chamber including a bottom member, side walls integrally connected to and upstanding from said bottom member and a cover member connected to said side walls and enclosing said mixing chamber;

a relatively cold water conduit means extending through said cover member for delivering relatively cold water into the interior of said mixing chamber, said cold water conduit being postured to issue cold water toward said bottom member;

a relatively hot water conduit means extending through said cover member for delivering relatively hot water into the interior of said mixing chamber, said hot water conduit

being postured to issue hot water toward said bottom member;

said cold and hot water conduits, directed toward said bottom member, serving to issue pressurized streams of fluid through said mixing chamber to facilitate complete mixing of the cold and hot fluids within the mixing chamber;

thermostat controlled valve means positioned within the interior of said generally closed mixing chamber and being connected to the outlet of said hot water conduit within said generally closed mixing chamber for controlling the temperature of the fluid within said generally closed mixing chamber;

a water carrying service tube having;

a first end extending into said generally closed mixing chamber and terminating adjacent said bottom member of said mixing chamber in a posture remote from said relatively cold and hot conduit means extending into said generally closed mixing chamber through said cover member to facilitate complete mixing of the cold and hot fluids within the mixing chamber prior to entry of of the fluid into said first end of said water carrying service tube, said service tube further having,

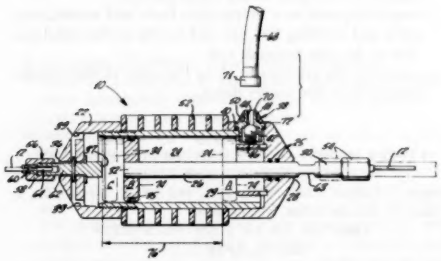
a second end extending through an integrally formed opening within an upper rim portion of said commode bowl, said second end extending through the rim in a posture located above the normal working water level of said commode bowl and being angled slightly upwardly to permit a jet of water issuing therefrom under pressure to be directed toward the posterior of an operator sitting in a normal position on said commode bowl; and

valve means interposed within said water carrying service tube for selectively regulating the pressure and volume of water issuing through said water carrying service tube wherein an operator may selectively adjust the intensity and volume of warm water issuing into said bidet-commode.

3,845,510
SWIMMING POOL RACING LINE TAKE-UP FLOAT ASSEMBLY

William O. Baker, Corona Del Mar, and Charles S. Johnson, Laguna Niguel, both of Calif., assignors to Baker Hydro Inc., Irvine, Calif.

Filed Dec. 21, 1973, Ser. No. 427,090
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172 **11 Claims**



1. A swimming pool racing line take-up device comprising:

a hollow casing;

a movable member mounted within said casing, one end of said member extending through one end of said casing, said one end of said member connected to said racing line; the other end of said casing being connected to a side of said swimming pool;

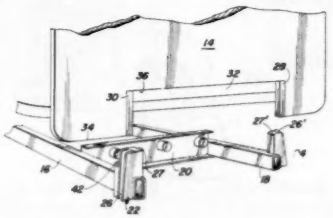
means located on said casing for allowing fluid communication between the interior of said hollow casing and an outside fluid supply; and

means attached to said movable member and responsive to said fluid communication for moving said movable member and induce strain in said racing line.

3,845,511
UNIVERSAL HEADBOARD CONSTRUCTION

Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, both of Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,434
Int. Cl. A61g *7/10*
U.S. Cl. 5—53 R **8 Claims**

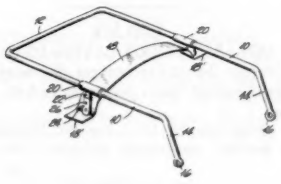


1. A headboard mounting, comprising a bed frame having means defining upright receiving channel means opening outwardly in respective opposite directions, and a headboard having a bottom with an upwardly extending recess with a marginal wall edge on each side of the recess engageable in the respective receiving channels.

3,845,512
INFANT BED FOR USE ON HORSEBACK

Donald E. Cobb, Belvidere, Kans., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 9, 1973, Ser. No. 358,592
Int. Cl. A61g *1/00*
U.S. Cl. 5—82 **2 Claims**



1. A bed for infants adapted to be secured to the back cinching of a saddle when the saddle is secured to a horse, said bed comprising:

a U-shaped tubular frame disposed horizontally with parallel legs, each leg having at its free end an extension disposed inclinedly downwards and terminating in a grommet;

lace means detachably securing said grommets to said cinch ring;

a curved band extending transversely between the legs in a position intermediate the ends thereof, each end of the band having a flattened portion disposed below the corresponding leg;

first and second vertical sleeves, each sleeve being secured at its bottom end to a corresponding flattened portion and

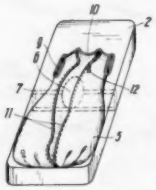
extending upward towards the corresponding leg;
first and second horizontal sleeves, each having a vertically downwardly extending stub, each horizontal sleeve slidingly engaging the corresponding leg with its corresponding stub extending into and engaging the top end of the corresponding vertical sleeve; and
bedding disposed over the frame and band.

3,845,513

SAFETY SLEEPING BAG FOR INFANTS AND BABIES

Heidegund Hubner, Kreuzackerstrasse 2, D-7157 Sulzbach-/Murr, Germany

Filed May 11, 1973, Ser. No. 359,602
Claims priority, application Germany, Mar. 18, 1972, 7218455
Int. Cl. A47g *9/00*
U.S. Cl. 5—336 **5 Claims**



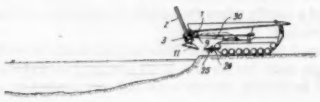
1. A safety sleeping bag for infants adapted to be detachably connected to the mattress of the crib comprising a stretchable bedlinen sheet, a closeable blanket of stretchable terrycloth, having a bodice-like upper portion with a square neck and a bag-like lower portion, sewn jointly with a soft, absorbant filler, to the sheet at an elliptically shaped surface portion of a back area of the blanket, a tension band, attached to the opposite side of the sheet in the area of the surface portion and adapted to securely surround the crib mattress, a divisible zipper, extending from the top of the bodice-like upper portion to the base of the bag-like lower portion, the slide of which is located in the bag-like lower portion when the zipper is closed, and a retainer for a disposable diaper, secured to a back portion of the blanket below the elliptically shaped surface portion.

3,845,514

MOVABLE BRIDGE LAYING DEVICE

Gerhard Wagner, Mainz-Lerchenberg, Germany, assignor to Klockner-Humboldt Deutz Aktiengesellschaft, Koln-Deutz, Germany

Filed Nov. 10, 1972, Ser. No. 305,345
Claims priority, application Germany, Nov. 12, 1971, 2156249
Int. Cl. E01d *1/00*
U.S. Cl. 14—1 **20 Claims**



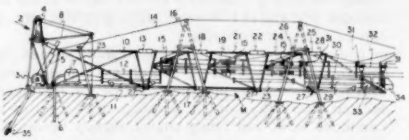
1. A bridge laying device which comprises: a vehicle, a bridge having a plurality of bridge sections, a laying device by means of which the bridge can be advanced and deposited into its position of use, said bridge having its front end provided with supports which are adapted to be placed on the ground of the obstacle to be bridged, bridge beams forming roadways, said supports being mounted at the front end of said bridge on the outside adjacent said bridge beams, and a transverse beam operatively connected for supporting additional bridge sections independently of said bridge, said transverse beam being linked to the front end of said bridge below said roadways, said supports being operatively mounted on said transverse beam, said supports together with said transverse beam forming a structural unit detachably connected to said bridge.

3,845,515

SELF-PROGRESSING CONSTRUCTION SYSTEM

Egon Gelhard, Mehlemer Strasse 28, 5, 51, Cologne, and H. Rudolf Gunkel, E. Gerlander Strasse 5A, 6390 Usingen, both of Germany

Filed Aug. 14, 1972, Ser. No. 280,180
Claims priority, application Germany, Aug. 14, 1971, 2140797
Int. Cl. E01d *19/02*
U.S. Cl. 14—77 **5 Claims**



1. A method for the self-progressing construction of a pipe railroad comprising the steps of:
a. providing an initial section of the pipe railroad, said railroad having a plurality of interconnected supports with pipe suspended therefrom, said pipe containing a vehicle trackway therein to form the pipe railroad and exterior vehicle trackways along opposite sides thereof;
b. transporting forward new pipe sections having construction supplies loaded therein from a supply depot by a rail vehicle movable along one of said exterior trackways;
c. providing a self-advancing assembly structure movable along and adjacent the forward end of said initial section of the railroad, said assembly structure having a rear receiving section and a forward erecting section;
d. transferring said loaded pipe from the rail vehicle to the receiving section of said assembly structure and unloading said construction materials therefrom;
e. utilizing said assembly structure and supplies to erect supports in advance of the initial section;
f. suspending said now empty pipe from said erected supports and securing the pipe end to end to the initial section of the pipe railroad; and
g. returning the rail vehicle along the other of said exterior trackways to the supply depot.

3,845,516

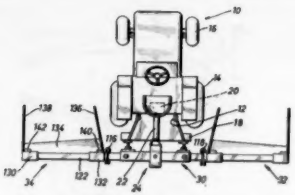
LITTER REMOVAL MECHANISM FOR POULTRY HOUSES AND THE LIKE

Bennie J. Abbott, Centerville, Tex., and Jeff A. Stroud, Rt. 2, Box 25, Madisonville, Tex. 77864

Filed Nov. 29, 1972, Ser. No. 310,219
Int. Cl. A01k *31/04*
U.S. Cl. 15—93 B **13 Claims**

1. A litter removal mechanism for poultry houses and the like comprising:
a vehicle mechanism provided with front and rear wheels, having a rear bumper assembly and having an implement lift;
a support framework being movably retained by said bumper assembly and being operatively connected to said lift;
a pair of scraper blades being pivotally supported one at either extremity of said support framework, said scraper blades being pivotally movable by ground resistance force

applied to said scraper blades during scraping movement of said vehicle mechanism from an operative laterally extended position of said blades where said blades are substantially co-extensive with said support framework, to a collapsed position by inertia developed upon movement of said vehicle in an opposing direction where said blades are disposed in angulated relation with said support framework and the effective width of the scraper blades and support framework assembly is reduced;



an adjustment yoke being supported in immovable relation with said implement lift;

jack screw means being threadedly received by said adjustment element and being connected to said support framework, said jack screw means being rotatable to impart vertical movement to said support framework relative to said implement lift.

3,845,517

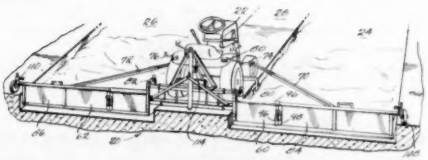
SCRAPER ATTACHMENT

James Leslie Harris, P.O. Box 74436, Sulphur, Okla. 73086

Filed Jan. 10, 1973, Ser. No. 322,545

Int. Cl. A01k *31/04*

U.S. Cl. 15—93 B **15 Claims**



1. A scraper attachment for a vehicle comprising:

a frame for attachment to said vehicle including at least a single horizontally extending, hollow tubular member,

at least a single scraper blade member,

means for mounting said scraper blade member on said frame for movement in a horizontal direction toward and away from said frame, and pivotably about a substantially vertical axis, said means for mounting including a further member mounted for sliding movement within said hollow member, and a bearing member attached to said further member and defining a vertical pivoting axis, and means mounted on said frame and connected to said mounting means for causing said scraper blade member to move in said horizontal direction toward and away from said frame including

a screw member,

means for mounting said screw member on said frame for rotation about a vertical axis,

crank handle means for manually rotating said screw member,

means engaging the threads of said screw member for vertical movement as said crank handle means rotates said screw means, and

strut means connecting said further means to said thread engaging means for causing said further member to move horizontally as said thread engaging means moves vertically.

3,845,518

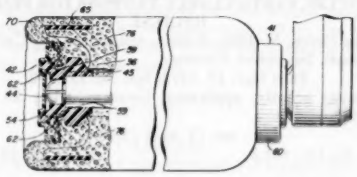
MOP HEAD

Samuel J. Popeil, Chicago, and David V. Shaw, Villa Park, both of Ill., assignors to Popeil Brothers, Inc., Chicago, Ill.

Filed Aug. 8, 1973, Ser. No. 386,568

Int. Cl. A47l *13/142, 13/16*

U.S. Cl. 15—228 **8 Claims**



1. A mop head for use with a wringer mop having a mop head support shaft, one end of which is rotatable while the other is fixed, each shaft end having means to engage a wringer spool and anchor spool, and a mop handle generally perpendicualr to the shaft comprising,

a sponge block having a rectangular cross section and having four faces and four edges and a length exceeding the mop head support shaft,

an anchor spool secured to one end of said block,

a wringer spool secured to the other end of said block,

a wringer end sleeve portion formed by a cut out in the wringer end of said sponge block,

said wringer spool lying within and secured to the end of said sleeve portion,

whereby securing said mop head to the support shaft including pressing the wringer spool inwardly reversely folds the sleeve portion, the outer reaches of said sleeve portion extending beyond the wringer spool for direct contact with corner areas when mopping.

3,845,519

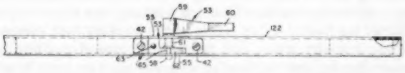
WINDSHIELD WIPER ASSEMBLY

William J. Quinlan, 935 N. Taffee Dr., and Lawrence L. Huver, 1111 N. Boltwood St., both of Hastings, Mich.

Division of Ser. No. 267,620, June 29, 1972, Pat. No. 3,780,394, Division of Ser. No. 90,987, Nov. 19, 1970, Pat. No. 3,717,900. This application Sept. 11, 1973, Ser. No. 396,134

Int. Cl. B60s *1/40*

U.S. Cl. 15—250.32 **4 Claims**



1. A windshield wiper blade assembly for connection to a wiper arm having a laterally extending mounting pin, said wiper blade assembly comprising a wiper blade body having a crown portion and a wiper portion integrally connected to the base of said crown portion, and a wiper arm connector secured on the crown portion of the blade body, said connector including a base portion overlying said crown portion approximate the center of the crown portion, and a pair of transversely spaced upstanding side walls extending from said

connector base, aligned apertures provided in said side walls for receiving a wiper arm mounting pin, a bushing secured to one side wall in register with the aperture therein and extending from said one side wall toward the other side wall but separated from said other side wall, and spring locking means secured to said base and movable in the region between said bushing and the other side wall for engaging the laterally extending mounting pin of a wiper arm when it is received in the apertures of said side walls and locking the mounting pin in position within said apertures.

3,845,520

APPARATUS FOR PRESSING ABSORBENT COTTON ARTICLES, PARTICULARLY TAMPONS FOR FEMININE HYGIENE

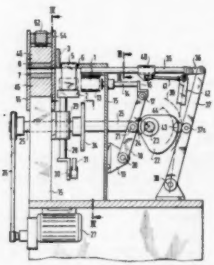
Stefan Simon, Modling, Austria, assignor to Dr. Carl Hahn GmbH, Dusseldorf, Germany

Filed Mar. 17, 1972, Ser. No. 235,770

Claims priority, application Germany, Mar. 25, 1971, 2114530

Int. Cl. A611 *15/00*

U.S. Cl. 19—144.5 **10 Claims**



1. An apparatus for pressing absorbent cotton articles, particularly tampons, for feminine hygiene which comprises at least one pair of first shaping means disposed in the direction of passage of the workpiece, in serial relationship therewith, said apparatus having a workpiece carrying means and a pair of pressing jaws, said workpiece carrying means located upstream of said pair of pressing jaws, said first shaping means comprising a pair of shaping jaws comprising an upper shaping jaw and a lower shaping jaw, one of which is positioned over the other in facing relationship therewith, means for moving said lower shaping jaw upwardly and downwardly, said apparatus further having at least one pressing means disposed in said direction of passage downstream of said first shaping means having at least one pair of pressing jaws comprising an upper presser jaw and a lower presser jaw having working faces, each of said working faces having a generally L-shaped configuration, the edge of the shorter leg adapted to abut the end of the longer leg of the other L-shaped working face, the working face of the shorter leg of the L-shaped member having a recess therein that faces the working face of the opposed shorter leg having a like recess in the working face thereof to define a cavity when said jaws are in closed position, said lower shaping jaw disposed at its lower most extreme in alignment with said workpiece carrying means.

3,845,521

RESILIENT DEVICES FOR TEMPORARILY BINDING AND GRIPPING THE EDGE OF MATERIALS

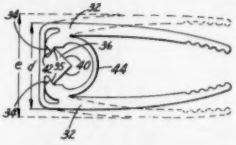
David H. McNichol, 1325 S. Belvoir Blvd., Euclid, Ohio 44121

Filed June 12, 1972, Ser. No. 261,953

Int. Cl. B42f *1/10*

U.S. Cl. 24—67.9 **10 Claims**

1. A device for securing, binding, or gripping sheet materials at a marginal edge of said materials, comprising a continuous section of resilient material having a pair of legs and connecting means joining said legs at one end portion of said legs, said legs extending from said connecting means and terminating in cooperating material engaging end portions adapted to clampingly secure the materials therebetween, said connecting means including a loop-shaped web member interconnecting said legs and disposed therebetween, said device being formed with surface means at the end thereof remote from the material engaging end portions of the legs including



a pair of opposed separable surfaces at the ends of the legs, said surface means being normally in mutual engagement and disposed to provide pivotal movement of each of the legs, and to generate a gripping force between said legs in reaction to separating movement of said legs at their material-gripping end portions, said loop-shaped web member being disposed between said surfaces and said material engaging end portions of said legs.

3,845,522

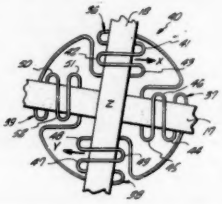
SAFE PERSONAL EFFECTS POUCHES AND STRAP MEANS FOR UNDER ARM OR SHOULDER WEAR

John E. Soukeras, 440 Heliotrope St., Corona Del Mar, Calif. 92625

Division of Ser. No. 116,530, Feb. 18, 1971, Pat. No. 3,739,961. This application Apr. 12, 1973, Ser. No. 350,409

Int. Cl. A44b *11/00;* **A45c** *13/26*

U.S. Cl. 24—74 A **3 Claims**



1. A cross-over clip for assembling straps in a criss-cross configuration removably:

said clip comprising an array of bent loops disposed on each of four quadrant lines, loops on opposite ends of said clip being oppositely directed to form receiving guides for straps to be inserted therin in a twisting motion.

3,845,523

CABLE CLAMP

Mickey Lee Mayberry, Pfafftown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 11, 1973, Ser. No. 369,032

Int. Cl. F16g *11/03, 11/04*

U.S. Cl. 24—134 P **1 Claim**

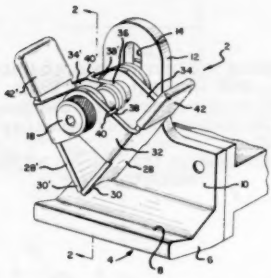
1. A clamp for clamping cables intermediate their ends, said clamp comprising:

a clamping plate having a supporting surface for supporting said cable,

a single supporting arm extending from one side edge of said plate normally of said surface,

a pivot pin adjustably mounted on said arm, said pin extending parallel to, and being spaced from, said surface and being adjustable towards and away from said surface,

a pair of clamping arms, each of said arms comprising a plate-like member having a pair of aligned mounting ears extending from its side edges intermediate its ends, said clamping arms being spaced from said pivot pin on opposite sides thereof said ears extending towards, and being pivotally mounted on, said pivot pin, said clamping arms having clamping ends which are adjacent to said surface, and



spring means on said pivot pin biasing said clamping ends in opposite directions such that saaid clamping ends are biased towards each other whereby,

upon swinging said arms in opposite rotary directions against the biasing force of said spring means so that said clamping ends move away from each other, said cable can be placed on said surface, and upon movement of said clamping ends towards each other, said ends clamp said cable against said surface.

3,845,524

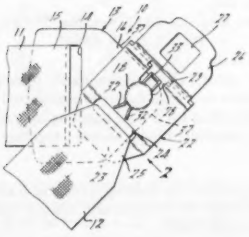
COUPLING DEVICE FOR SEAT BELTS

Neil A. Hull, Birmingham, and Richard E. Peel, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,810

Int. Cl. A44b *17/00, 11/25*

U.S. Cl. 24—222 R **5 Claims**



1. A coupling device for connecting a shoulder harness to a lap belt,

the coupling device includes a plate adapted to be connected to one end of a shoulder harness,

the plate having a substantially triangular end portion with an upstanding post at the apex of the triangle,

the post having an enlarged head,

and a tongue adapted to be connected to one end of a lap belt segment,

the tongue having a retention slot intermediate its ends having interlocking engagement with the post,

wherein the improvement comprises:

a rotation limiting device having retention means substantially paralleling the plate and engaged with the post,

and an angularly related leg portion,

the leg portion projecting through the slot in the tongue,

the leg portion being relatively movable around the plate triangular end portion for engagement with the side edges of the latter to limit the rotatability about the post of the plate relative to the tongue.

3,845,525

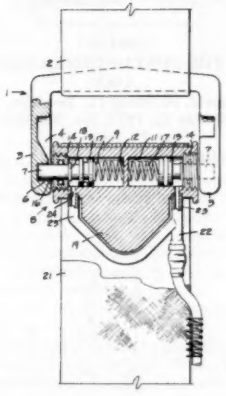
SURVIVAL KIT CONNECTION TO HARNESS

John A. Gaylord, San Diego, Calif., assignor to H. Koch & Sons, Inc., Costa Madera, Marin County, Calif.

Filed Jan. 22, 1974, Ser. No. 435,595

Int. Cl. A44c *5/18;* **A44b** *17/00*

U.S. Cl. 24—201 A **3 Claims**



1. Connecting means for harness webbing comprising

a male connector member,

locking pins reciprocably extended in opposite directions from said male connecting member,

a piston on each locking pin reciprocable in said male connector member,

resilient means to normally urge said piston outwardly so as to project said locking pins outward from said male connecting member,

and means to limit the outward travel of each piston thereby to form a chamber for gas under pressure,

a female connector member,

elements on said female connector member being adapted to straddle said male connector member,

there being a socket in each of said straddling elements registerable with the respective locking pins,

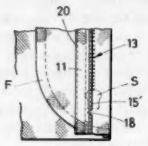
and means to conduct gas under pressure into said chambers simultaneously for forcing said pistons against said resilient means thereby to withdraw said locking pins from the respective sockets.

3,845,526

ZIP FASTENER CHAIN FOR TROUSER FLIES

Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,196
Claims priority, application Japan, July 15, 1971, 46-62200
Int. Cl. A44b *19/00*
U.S. Cl. 24—205 R **1 Claim**



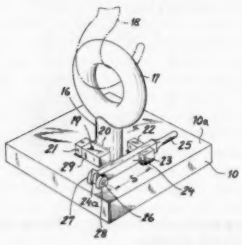
1. A slide fastener chain for attachment to a trouser fly or the like comprising a pair of opposed stringer tapes of continuous length and a pair of rows of inter-engaging fastener elements mounted along a pair of adjacent corresponding longitudinal edges of said stringer tapes, each of said elements having a coupling head, arms extending therefrom and a base portion connecting between adjacent arms, both of said stringer tapes having at predetermined intervals a slider threading region including fastener elements devoid of said coupling heads, and said slider threading region on one of said stringer tapes having a recess in the longitudinal edge thereof and extending in a transverse direction thereof and slightly beyond said base portion of said element.

3,845,527

HOIST LOCK FOR CONTAINERIZED CARGO AND THE LIKE

Salvatore Lombardi, 10 Strong Pl., Brooklyn, N.Y. 11231

Filed May 23, 1973, Ser. No. 363,116
Int. Cl. B66c *1/66*
U.S. Cl. 24—221 R **6 Claims**



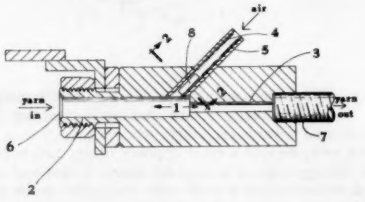
1. A hoist lock for a container having a wall provided with a slot, said lock comprising a plate adapted to overlie said wall and formed on its underside with a boss receivable in said slot; a T-member rotatable in said plate about an axis extending generally transversely thereto, said T-member being formed on the underside of said plate with a crossbar angularly displaceable about said axis from a position of alignment with said boss into a position in which said crossbar underlies said wall along opposite flanks of said slot, a shank extending through said plate and connected to said crossbar, and a formation on said shank along the upper surface of said plate for engagement with said hoist; and a latch bar pivotally mounted on said upper surface of said plate and engageable with a flank of said shank for preventing rotation thereof at least upon disalignment of said crossbar and said boss, said shank being formed with a flat linearly extending surface parallel to said axis, and said bar being provided with a latch surface confronting said shank surface in a locked condition of said shank, said surface of said shank being formed by at least one block rigid with said shank and having a length at least equal to the radius of said shank, said plate being provided with supporting members spaced apart along said bar and preventing lateral displacement thereof upon angular stressing of said T-member in a locking position of said bar, one of said supporting members comprising a pair of trunions, said bar being pivotally mounted in said trunions for swinging movement about an axis parallel to said upper surface and transverse to the bar, the other supporting member being formed as an abutment spaced from said trunions and lying along a flank of said bar opposite that which confronts said shank.

3,845,528

NONCIRCULAR AIR ORIFICE IN COMMINGLING JETS FOR MULTIFILAMENT YARN

Dick Charles Vermeer, Chester, Va., and Joseph Pontrelli, Newark, Del., assignors to Allied Chemical corporation, New York, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,999
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **2 Claims**



1. In an apparatus for commingling individual filaments in a multifilament yarn comprising a body having a yarn passageway and a gas passageway intersecting with said yarn passageway the improvement comprising

said gas passageway having a noncircular orifice near said intersection with said yarn passageway, said noncircular orifice having a V-shaped cross-section with an arc opposite the apex,

so that gas issues from said noncircular orifice to impinge on any yarn present in said yarn passageway.

3,845,529

APPARATUS AND PROCESS FOR TACKING FABRICS

George S. Van Deusen, Charlotte, N.C., and Richard K. Teed, Greenwood, S.C., assignors to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Aug. 31, 1972, Ser. No. 285,253
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 R **19 Claims**

1. A tacking apparatus for preliminarily securing at least a first fabric portion to a base fabric in juxtaposed face to face relation in preparation for a final needling operation in which the fabrics are relatively finally secured together which comprises:

a. a frame;

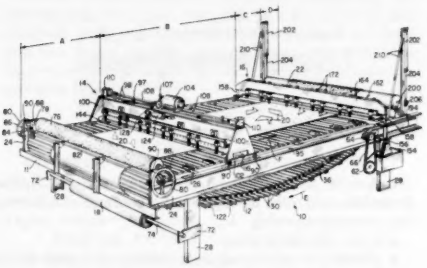
b. a fabric input end for feeding fabrics in juxtaposed face-to-face relation in pre-selected relative positions with respect to each other;

c. a fabric output end;

d. conveyor means for carrying the fabrics from said input end to said output end while in said pre-selected relative positions;

e. means for preliminarily tacking at least a first fabric to said base fabric with needle means adapted to penetrate the fabric layers and cause certain of the fibers of at least a first fabric to penetrate at least a second fabric and intermingle with fibers thereof to secure the fabrics in face-to-face relation sufficiently to maintain their relative positions in preparation for further tacking;

f. means for activating said fabric conveyor means to convey said preliminarily tacked fabrics toward the output end of the apparatus for said further tacking; and



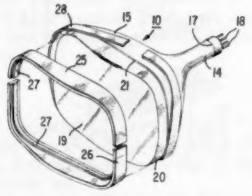
g. means positioned at the output end for further tacking said preliminarily tacked fabrics including needle means adapted to additionally penetrate said preliminarily tacked fabrics, said needle means being configured to cause certain of the fibers of at least a first fabric to penetrate a second fabric and intermingle with fibers thereof, said preliminary tacking thereby partially securing said fabrics together while in said pre-selected relative positions, and said further tacking additionally securing said fabrics in said relative positions for final needling whereby said fabrics are relatively permanently secured together.

3,845,530

METHOD FOR RENDERING CATHODE-RAY TUBE MORE RESISTANT TO IMPLOSION AND PRODUCT THEREOF

Richard Bibby Platt, Midland, Ontario, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,853
Int. Cl. H01j *9/18, 29/06;* **C09j** *5/00*
U.S. Cl. 29—25.13 **4 Claims**



1. A method for rendering a cathode-ray tube more resistant to implosion, said tube comprising an evacuated envelope including a glass faceplate panel, said method comprising

a. providing a reinforcing structure including two metal rim plates contoured to encircle said panel, the inner surface of said rim plates carrying a nontacky coating of an adhesive material that can be made tacky by applying thereto an organic solvent therefor,

b. tackifying said coating by applying thereto a controlled amount of an organic solvent therefor,

c. positioning said reinforcing structure around said panel with said tacky coating against the outer surface thereof,

d. positioning a metal band around said rim plates and said panel,

e. fixing said positioned band to itself,

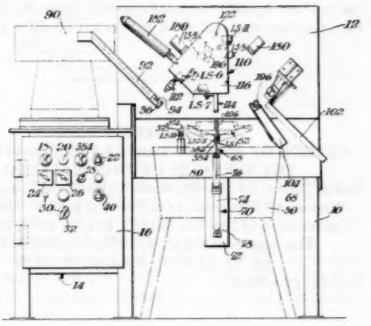
f. and then drying said coating to adhere said reinforcing structure to said panel.

3,845,531

COMPOSITE CASTING APPARATUS

Andrew R. Halko, Newark, and Allan B. Hughes, Wilmington, both of Del., assignors to Halko Manufacturing Company, Inc., New Castle, Del.

Filed Oct. 23, 1973, Ser. No. 408,746
Int. Cl. B22d *31/00, 45/00*
U.S. Cl. 29—33 C **23 Claims**



1. In an apparatus effecting composite die castings having a mold with cooperating movable die members, actuating means for operating said members between open and closed mold positions, a container for molten metal communicating with said mold, pump means for transferring said molten metal into said mold to form said castings including a sprue, a supply magazine for continuously supplying clips to a delivery position, the combination comprising:

a severing means for separating the sprue from said die casting, and

a pivotal transfer means including angularly spaced clip and weight pick-up means for sequentially transferring said clips from said supply magazine to said mold to form said composite casting and then transferring said composite casting from said mold to said severing means for removal of said sprue.

3,845,532

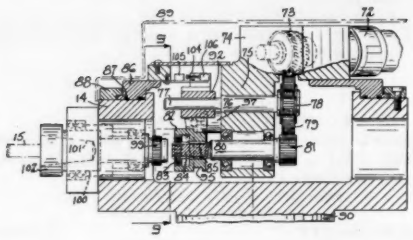
TURRET LATHE

William R. Smith, Springfield, Vt., assignor to Textron, Inc., Providence, R.I.

Division of Ser. No. 125,162, March 17, 1971, Pat. No. 3,750,244. This application Apr. 19, 1973, Ser. No. 352,671
Int. Cl. B23b *3/18, 39/20*
U.S. Cl. 29—40 **5 Claims**

1. In a machine tool having a turret adapted to present one of a plurality of tools to a working position, a plurality of angularly disposed tool receiving spindles carried in said turret, said spindles having axes residing in a common plane, means rotatably mounting said turret with respect to said drive means, a support means extending vertically into said turret from the top thereof, a spindle drive shaft rotatably mounted in said support means and carrying coupling means thereon movable into and out of driving engagement with a spindle in

the working position, means for moving said coupling means into and out of driving engagement with a spindle in the work-



ing position, spindle drive means, and means on said support means connecting said drive means to said drive shaft.

3,845,533

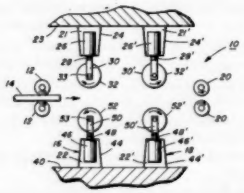
METHOD OF AND APPARATUS FOR CONDITIONING THE SURFACES OF THIN MATERIALS

Lionel Tinfow, 24 Oak Pl., North Caldwell, N.J., and Sidney V. Winton, 57 Arlington Ave., New York, N.Y. 12603

Continuation of Ser. No. 96,323, Dec. 9, 1970, abandoned. This application Apr. 9, 1973, Ser. No. 349,312

Int. Cl. 51 *87 R*; **B21c** *37/30, 43/00*

U.S. Cl. 29—90 R **6 Claims**



1. A method for simultaneously buffing opposite sides of axially elongated, relatively rigid, thin, discontinuous strips of material comprising,

a. moving the said strip axially into a buffing zone defined by at least two spaced-apart pairs of spaced-apart, opposed rotary buffing means, the strip being supported against engagement with the opposed buffing means by feed support means displaced rearwardly of the buffing zone with respect to the direction of movement of the strip,

b. simultaneously engaging the opposed buffing means to opposite sides of the strip when the free, leading end thereof reaches the end of the buffing zone distal to said feed support means,

c. rotating the respective pairs of opposed buffing means in directions sufficient to generate a net tensil stress in the strip in the buffing zone, and

d. simultaneously disengaging the respective pairs of opposed buffing means from the strip as the free trailing end thereof reaches the end of the buffing zone proximal to the said feed support means, and

e. withdrawing the strip from the buffing zone.

3,845,534

GROOVED ROLLER AND METHOD OF MAKING SAME

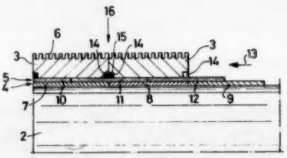
Eduard Kusters, Finkenweg 18, 415 Krefeld-Forstwald, and Valentin Appenzeller, Kempen/Ndrh., both of Germany, assignors to said Kusters, by said Appenzeller

Filed May 31, 1973, Ser. No. 365,611

Claims priority, application Germany, June 6, 1972, 2227356

Int. Cl. B21b *31/08*

U.S. Cl. 29—130 **16 Claims**



1. A roller for use in the manufacture of paper, cardboard or the like, said roller having a working surface of a corrosion-free metal, comprising:

a metal cylindrical core;

a plurality of axially adjacent sleeves of a corrosion-free metal on the core; and

at least one intermediate layer formed by a plurality of thin sleeves between said corrosion-free sleeves and said core, the edges of said thin sleeves and the edges of said corrosion-free sleeves being axially displaced from each other.

3,845,535

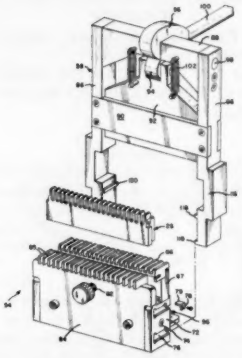
APPARATUS FOR CONNECTING CONDUCTORS TO CONTACT TERMINALS IN AN ELECTRICAL CONNECTOR

William Roderick Over, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 4, 1973, Ser. No. 347,965

Int. Cl. H05k *3/32, 13/04*

U.S. Cl. 29—203 MW **9 Claims**



1. Apparatus for inserting each of a plurality of conductors into each of a plurality of conductor-receiving slots in electrical contact terminals which are contained in a housing, said apparatus comprising:

a base frame member having a free end,

first jig means in said base frame member for holding said housing in a predetermined position with said slots directed towards said free end,

second jig means in said base frame member for locating said conductors on said free end and in alignment with said slots,

an insertion tool removably mounted on said base frame member, said insertion tool having an insertion slide, said slide being normally spaced from said free end and being reciprocable towards and away from said free end, said slide having means for engaging said conductors and moving said conductors from said second jig means into said slots of said terminals whereby, said conductors can be positioned in said second jig means when said insertion tool is removed from said base member, and upon assembly of said insertion tool to said base frame member and actuation of said insertion slide, said conductors are inserted into said slots and thereby connected to said terminals, and upon subsequent removal of said tool from said base frame member, said connector with said conductors connected to said terminals can be removed from said base frame member.

3,845,536
COVERED WIRE WRAPPING APPARATUS

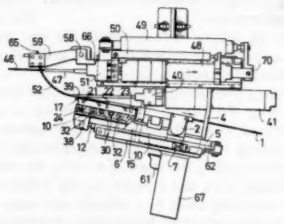
Takashi Kobayashi, Fujisawa; Masaaki Aida, Yokohama; Tooru Mita, Yokohama, and Takayuki Nishi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 15, 1973, Ser. No. 388,556

Claims priority, application Japan, Aug. 18, 1972, 47-82175; Sept. 22, 1972, 47-94551; Sept. 22, 1972, 47-94552

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 DT **8 Claims**



1. A covered wire wrapping apparatus comprising, in combination, a cutting and stripping tool for cutting an elongated covered wire into severed covered wires of a predetermined length and stripping a cover from the end portion of said severed covered wire to expose a conductor at the end portion of said severed covered wire, a wrapping tool comprising a bit adapted to wrap the conductor at the end portion of said severed covered wire about one terminal of an electrical component, and guide means for guiding said severed covered wire to lead to said bit of said wrapping tool from said cutting and stripping tool.

3,845,537
ASSEMBLY APPARATUS

Clifton E. Ayers, New Whiteland, and Walter G. Herreman, Indianapolis, both of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Oct. 19, 1973, Ser. No. 407,927

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 F **7 Claims**

1. An assembly apparatus, comprising:

a. a housing;

b. a first rotating drum journaled for rotation in said housing;

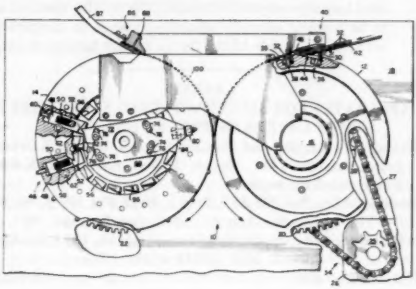
c. a first plurality of nests in an outer periphery of said first rotating drum;

d. a first loading means for loading each of said first nests with a component of assembly;

e. first retention means carried by said first rotating drum for retaining said first components of assembly in said first nests;

f. a second drum journalled in said housing and rotating in close proximity to and in an opposite direction to said first drum and about an axis substantially parallel to the rotational axis of said first rotation drum;

g. a second plurality of nests in an outer periphery of said second rotating drum;



h. second loading means for loading each of said second nests with a second component of assembly;

i. second retention means for retaining said second components of assembly in said second nests;

j. ejection means for urging a second assembly component from a nest in said second drum into assembly with a first assembly component retained in a nest in said first rotating drum; and

k. a drive means connected to and rotating said first and second rotating drums.

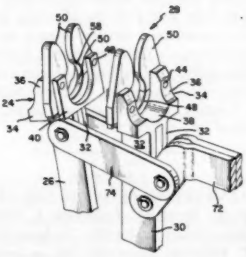
3,845,538
HAND TOOL

Henry William Demler, Sr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 313,711, June 26, 1973, abandoned. This application Apr. 3, 1974, Ser. No. 457,668

Int. Cl. B23p *19/04*

U.S. Cl. 29—234 **7 Claims**



1. A hand tool for use in pulling together flanged tubular members, which comprises:

a. a first handle having a jaw end and a holding end;

b. a second handle having a jaw end and a pivoting end, said pivoting end being pivotally connected to the first handle

adjacent its holding end and its jaw-receiving end adjacent the jaw-receiving end on the first handle;

c. actuating means linked to the first and second handles for moving the handles so that the jaw ends move toward or away from each other;

d. jaw members attached to each jaw end and each having a tubular member-receiving channel and an upstanding rib positioned transversely in the channel; and

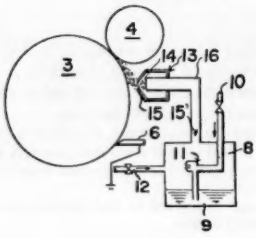
e. a pair of inserts on each jaw member, said inserts pivotally mounted on either side of the channel and in alignment with the rib and movable in a plane normal to the axis of the jaw members, said inserts adapted to be pivoted laterally outwardly to admit the tubular member and to be pivoted laterally inwardly to abut, in cooperation with the rib, a side of the flange on the tubular member.

3,845,539

APPARATUS FOR MANUFACTURING STEEL SHEETS WITH LAYERS OF PROTECTIVE METAL

Hidehisa Yamagishi, and Fumitoshi Yokoi, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa-Ken, Japan

Division of Ser. No. 259,287, June 2, 1972, Pat. No. 3,781,968. This application July 31, 1973, Ser. No. 384,384
Claims priority, application Japan, June 16, 1971, 46-42498
Int. Cl. B22f ; B21b *45/02, 27/06*
U.S. Cl. 29—420 **9 Claims**



1. Apparatus for manufacturing a steel sheet coated with a layer of protective metal comprising a rolling mill including: cooperating rolls between which a steel sheet coated with a powder of the protective metal is passed,

means for electrostatically applying a small quantity of oil onto the surfaces of said rolls, said means for electrostatically applying said oil comprising means for atomizing said oil by means of primary and secondary pressurized air, a nozzle for electrostatically ejecting the atomized oil towards said mill rolls, means for varying the quantity of oil applied onto said rolls by adjusting the primary and secondary pressurized air, and means for conveying the atomized oil ejected from said nozzle towards said rolls of said rolling mill by the action of an electrostatic field, and equalizing rolls cooperating with said rolls of said rolling mill for forming thin films of said oil on the surfaces of said rolls of said rolling mill.

3,845,540

HOT GALVANIZING PROCESS AND APPARATUS

Joseph R. Rossi, Cortland; Frederick J. Griffiths, Warren, both of Ohio; James L. Griffin, Jackson Center, Pa., and Gormen C. Palleson, Naperville, Ill., assignors to Maneely-Illinois Inc., Chicago, Ill.

Filed Apr. 28, 1972, Ser. No. 248,739
Int. Cl. B23p *11/00*
U.S. Cl. 29—430 **8 Claims**

1. A method of continuously forming and galvanizing tubing comprising the steps of:

a. continuously feeding strip stock to a tube forming mill including the step of cleaning, degreasing and preparing at least the surface of the stock thus fed that is to form the outer surface of the tubing,

b. forming the stock so that the lateral edges thereof are in abutment;

c. welding the edges together to form the tubing;

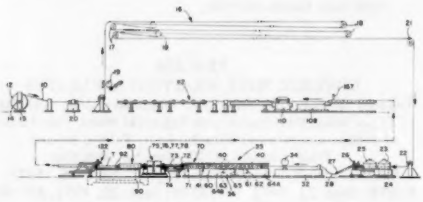
d. spraying an acid solution against the entire outer periphery of the tubing in a direction countercurrent to the direction of tube movement;

e. wiping the tubing to remove excess acid;

f. rinsing the tubing to remove acid on the surface thereof by directing a rinse solution against the tubing in a direction countercurrent to tube movement;

g. wiping the tubing to remove the rinse solution;

h. preheating the tubing to a temperature between 300° and 1,300°F while maintaining the tubing in an inert atmosphere;



i. applying molten zinc to the tubing by passage of the tubing through a chamber substantially completely filled with molten zinc;

j. wiping the tubing to redistribute the zinc on the tubing surface, to remove excess zinc, and to develop uniformity in coating thickness;

k. quenching the tubing to form a hardened zinc coating by immersing the tubing in water having a continuously maintained, controlled decreasing temperature gradient from tubing entry to the quench to tubing exit from the quench including the steps of sensing the temperature at the tubing entry and controlling the temperature of the water at tubing entry to a preselected range; and

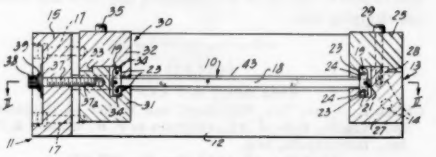
l. cutting the continuous tubing into preselected lengths.

3,845,541

SELF-CONTAINED MULTI-BLADE PACKAGE AND METHOD OF MAKING SAME

Louis F. Ranieri, 8423 N. Clifton St., Niles, Ill. 60648

Filed Sept. 4, 1973, Ser. No. 394,398
Int. Cl. B26d *1/00*; **B23p** *11/00*
U.S. Cl. 29—432 **10 Claims**



1. A self-contained, preassembled, multi-blade package for mounting in a blade head assembly of a wafering machine having square tensioning shoulders and wherein opposite end portions of the blades are clamped for unison tensioning of the blades by said shoulders, comprising:

a plurality of substantially coextensive elongated thin flat strip blades in side-by-side assembly and having opposite end portions each of which has a hole therein aligned with the holes in the remaining blades;

elongated rectangular spacer plates between the end portions of the blades and having therein holes aligned with one another and with the holes in the blades and offset from the longitudinal center line of the plate toward the adjacent ends of the blades;

elongated rectangular end plates generally coextensive with and aligned with the spacer plates at the opposite sides of the blade package and having aligned holes aligned with the holes of the spacer plates;

said plates extending substantially above and below the longitudinal edges of the blades;

aligned holes in the upper and lower portions of the plates spaced from the edges of the blades and offset both upwardly and downwardly and laterally relative to the holes of the plates which are aligned with the holes in the blades; and

respective bolt rods extending through the aligned holes in the plates above and below the blades and through the aligned holes in the plates and the blades and securing the blades and plates in fixed package unit assembly.

3,845,542

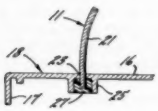
METHOD OF ATTACHING A ROPE HANDLE TO A THIN-WALLED BATTERY

Anthony Sabatino, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Continuation-in-part of Ser. No. 295;299, Oct. 5, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,260

Int. Cl. B29d *31/00*

U.S. Cl. 29—458 **4 Claims**



1. The method for attaching a rope handle to a battery having a relatively thin container wall comprising the steps of forming on only one side of said wall a thin projecting rib having substantially the same thickness as said wall so as to define a fluid containing pocket, pouring settable plastic into said pocket, causing said plastic to set so that the wall, rib and plastic define a solid block, then forming an opening through one of said thin container wall and thin projecting rib and extending into said plastic, said opening having a smaller cross sectional area than the cross sectional area of said pocket in alignment therewith, and securing the rope end of a handle in said solid block with said rope projecting out through said opening.

3,845,543

METHOD OF PRODUCING A VACUUM SWITCH CONTACT

Adrian W. Roth, Aarau, and Joachim Amsler, Seon, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

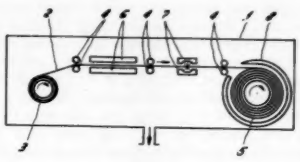
Filed Feb. 22, 1973, Ser. No. 334,889

Claims priority, application Switzerland, Mar. 17, 1972, 4036/72

Int. Cl. B23k *31/02*

U.S. Cl. 29—472.3 **3 Claims**

1. A method of producing a vacuum switch contact constituted by a support material having a low vapor pressure and a further material having a high vapor pressure deposited on the support material by evaporation in vacuo, said method comprising placing a supply of the support material in sheet form having a thickness of 0.05 to 0.5 mm in a vacuum chamber at a vacuum pressure of at least 10^{-3} Torr, heating successive sections of said supply of support material in said chamber to a temperature above 600°C to degas the material, subsequently vapor-coating in said chamber said successive sections of the support material with said further material of high vapor pressure, reforming in said chamber the now



coated support material into its original supply form, subjecting the supply of coated support material in said vacuum chamber to a compressive force at a temperature above the melting point of said further material to effect diffusion of the two materials and joinder thereof, and then cooling and removing the now formed contact from the vacuum chamber.

3,845,544

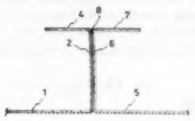
METHOD OF PRODUCING A LIGHT ROOM ELEMENT

Matti Pekka Nurminen, Lamminranta, and Paavo Henrikki Hammar, Urheilukentankatu 5 D 69, both of 30100 Forssa, Finland

Filed Sept. 20, 1972, Ser. No. 290,583

Int. Cl. B23p *3/00, 25/00*

U.S. Cl. 29—458 **3 Claims**



1. A method of producing a light room element, e.g., a bathroom element, including equipment and rising mains, out of steel cassettes with a U-formed section, characterized in

coating steel sheets constituting the material of the steel cassettes on one side with a plastics layer;

bending the steel sheets into a desired U-form that the plastics layer also appears on the seam surfaces between the cassettes; and

joining the cassettes by heating the seam portions of the cassettes by means of the induction method such that the plastics layers thereon are momentarily molten and wedged together in a water-tight manner.

3,845,545

METHOD FOR MAKING REGENERATIVE HEAT-EXCHANGER SEALS

Alan John Surrall, Studley, and Peter Philip Candlin, Solihull, both of England, assignors to British Leyland Truck and Bus Division Limited, Lancashire, England

Filed Aug. 14, 1972, Ser. No. 280,556

Claims priority, application Great Britain, Sept. 21, 1971, 43916/71

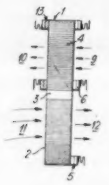
Int. Cl. B23k *31/02*

U.S. Cl. 29—494 **5 Claims**

1. A method of manufacturing a counterface hot-side seal for a rotary disc-type matrix of a regenerative heat-exchanger

for use in a gas turbine engine, which method comprises:

a. providing a ferritic support member;
b. forming a counterface element from a metal oxide in compacted block form;
c. reducing a surface of said metal oxide element to its metal;
d. heat treating the said surface;
e. applying a paste of brazing powder and flux to said surface and to a surface of said ferritic support member;



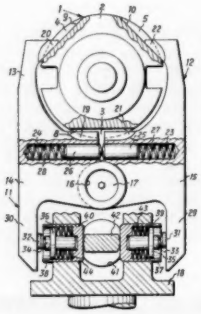
f. bringing said two surfaces together and raising the assembly so formed to a brazing temperature in an inert atmosphere and thereby brazing the counterface element to the support member; and
g. lapping a surface of said counterface element opposite to said first mentioned surface to a requisite flatness for it to serve as a counterface seal.

3,845,546

TOOL CHANGE MECHANISM

Arno Rutschke, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 18, 1972, Ser. No. 289,800
Claims priority, application Switzerland, Oct. 1, 1971, 14324/71
Int. Cl. B23q *3/00*
U.S. Cl. 29—568 **8 Claims**



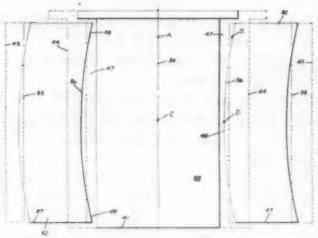
1. A tool change mechanism comprising an axially extending tool holder, a clamp with arms for gripping the tool holder, said tool holder possessing a flange equipped with three recesses at its periphery, said recesses being formed by grooves lying in a plane substantially perpendicular to the axis of the tool holder, each arm engaging in two grooves of the flange, substantially linear extending webs at the inside of the arms, the length of said webs being smaller than one-half of the length of each of the grooves and the cross-section of said webs being accommodated to the cross-section of the grooves, a pivot bolt about which the arms of the clamp are pivotably arranged, aligned blind hole bores provided at the arms, bolts bearing against one another arranged in said aligned blind hole bores, spring means for loading said bolts, the clamp further possessing rearwardly directed arms with respect to the axis of rotation defined by said pivot bolt, bolts guided at substantially pot-shaped sleeves against which bear said rearwardly directed arms, a rotatable pin having a substantially rectangular-shaped cross-section against which bear said pot-shaped sleeves.

3,845,547

METHOD OF MANUFACTURING A LAMINATED ASSEMBLY

Hugh B. Reynolds, Rome City, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 12, 1971, Ser. No. 142,594
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **13 Claims**

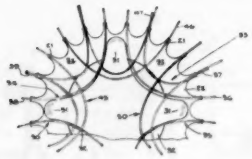


1. A method of manufacturing an assembly for a dynamoelectric machine including a core formed of a plurality of laminations of ferro-magnetic material and having a plurality of teeth with edges of the extremities of the teeth defining a bore, the method including: axially aligning the magnetizable laminations in stacked relation and forming the assembly with edges of the lamination teeth defining circumferentially spaced apart bore surfaces of the core; positioning a member formed of a material selected to have a coefficient of thermal expansion different than the coefficient of thermal expansion of the material forming selected portions of the assembly, in close proximity to such selected portions of the assembly while the member and the selected portions of the assembly are in a first thermal state; initially transferring heat relative to the member and the assembly, to cause a first dimensional change in the member and assembly, and to force the selected portions to conform to the configuration of the portion of the member proximate thereto; subsequently transferring heat relative to the member and assembly to cause a second dimensional change in the member and material forming selected portions of the assembly thereby to return the member to the first thermal state and preselected physical configuration thereof, and to establish the preselected dimensional relationships between selected surface portions of the assembly; and separating the member and assembly the assembly including a winding having at least one group of end turns, the member including a portion for disposition proximate to the at least one group of end turns; and wherein initially and subsequently transferring heat to the member and assembly cause the portion of the member to shape the at least one group of end turns into conformity with the surface configuration of such portion.

3,845,548
APPARATUS AND METHOD FOR INSERTING DYNAMOELECTRIC MACHINE COILS

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 25, 1973, Ser. No. 409,575
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **11 Claims**

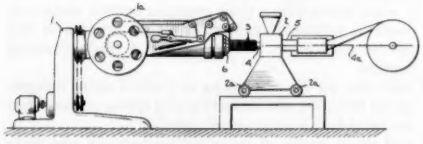


1. A method of inserting at least two winding coils, each comprising at least one winding turn, one of which overlies the other, into axially extending slots of a dynamoelectric machine core; said method including placing portions of at least one turn of at least one first coil in turn-receiving gaps of coil insertion equipment; placing portions of at least one turn of at least one other coil in gaps of the coil insertion equipment and in overlying relationship to at least part of at least one turn of the at least one first coil; moving turn advancing means comprising turn feeding members into engagement with selected portions of at least one turn of the at least one first coil so as to apply force directly thereto, while nesting the end turn portion of at least one turn of the at least one first coil in a pocket defined by the turn advancing means, and while engaging at least one end turn portion of the at least one first coil and of the at least one other coil directly with the turn advancing means, whereby coil inserting forces are applied directly to an end turn portion of at least one turn of the at least one first coil and to an end turn portion of at least one turn of the at least one other coil while the at least one first coil and at least one other coil are moved along gaps of the coil injection equipment.

3,845,549
APPARATUS AND PROCESS FOR THE CONTINUOUS MANUFACTURE OF A WAVEGUIDE FORMED BY A CYLINDRICAL HELIX

Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Feb. 20, 1973, Ser. No. 334,012
Claims priority, application Italy, Mar. 14, 1972, 21796/72
Int. Cl. H01p *11/00*
U.S. Cl. 29—600 **7 Claims**

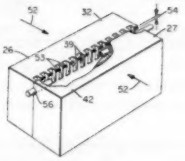


1. Apparatus for the manufacture of a waveguide comprising a conductor wound in the form of a helix and a sheath of extruded material thereover, said apparatus comprising a mandrel, forming means for forming said conductor into a helix around said mandrel, means for advancing said helix in the direction of its axis and away from said forming means as the helix is formed, extrusion means for extruding said material over said helix, said extrusion means being spaced from said forming means and being disposed to receive said helix as it is advanced and to extrude said material thereover, and moving means connected to one of said forming and extrusion means for moving said one means toward the other of said forming and extrusion means at a predetermined rate dependent upon the rate of relative movement between said helix and said extrusion means, said moving means comprising power operated means connected to said one means for displacing the latter in the direction of said axis and control means connected to said power operated means for controlling the displacement of said one means, said control means comprising constant speed means, relative movement means responsive to the speed of advance of said helix relative to said extrusion means, comparison means connected to said constant speed means and said relative movement means and responsive to the difference between the speed of said constant speed means and the speed of relative movement between said helix and said extrusion means, and actuation means connected to said comparison means and to said power operated means for controlling the operation of the latter.

3,845,550
METHOD OF MANUFACTURING A MAGNETIC HEAD

Beverley R. Gooch, Sunnyvale, and Edward Schiller, San Jose, both of Calif., assignors to Ampex Corporation, Redwood, Calif.

Division of Ser. No. 265,939, June 23, 1972, , which is a continuation-in-part of Ser. No. 67,784, Aug. 28, 1970, abandoned. This application Oct. 1, 1973, Ser. No. 402,298
Int. Cl. G11b *5/42*
U.S. Cl. 29—603 **12 Claims**



1. A method of constructing a magnetic transducer having a functional non-magnetic gap formed between a pair of complementary magnetic core halves, the steps comprising:

forming a plurality of spaced parallel notches extending into a block of magnetic material only between intersecting surfaces thereof to define a plurality of outwardly facing lands, one of said surfaces being planar;

forming an elongate groove in a plane surface of another block of magnetic material;

holding said blocks in confronting spaced apart relationship with said planar surfaces in opposition so that a portion of said elongate groove confronts a portion of each of said notches at said lands to form communicating free space regions between the confronting blocks in said notches, in said groove and between the planar surfaces;

filling the free space regions between said confronting planar surfaces, in said notches and in at least a part of said groove with glass, said glass forming an integral structural unit bonded to said planar surfaces and the walls of said notches and groove; and

slicing said blocks along planes parallel to and substantially bisecting each of said spaced parallel notches to form a plurality of individual transducers each having a pair of magnetic core halves with a nonmagnetic glass gap therebetween and having glass pockets on the side of the glass gap, said glass pockets and the glass between said core halves, including said glass gap, forming an integral structural unit.

3,845,551

HIGH STRENGTH HIGH CONDUCTIVITY ALUMINUM ALLOY WINDINGS IN LARGE CORE FORM TRANSFORMERS

Laurence D. Kunsman, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 168,770, Aug. 3, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,421

Int. Cl. C21d *9/52;* **C22c** *21/04;* **C22f** *1/04*

U.S. Cl. 29—605 **2 Claims**

1. In the method of forming a coil for use in a core form transformer, the steps comprising solution heat treating at a temperature within the range between 800°F and 950°F an age hardenable aluminum base alloy having a composition of between about 0.35 and 0.8 percent Mg, 0.3 and 0.7 percent silicon, 0.5 percent maximum iron and the balance aluminum in the form of wire, over-aging the wire to effect a temper equivalent to about one-quarter hard, winding the wire into coil configuration and assembling the coil into a core form transformer.

3,845,552

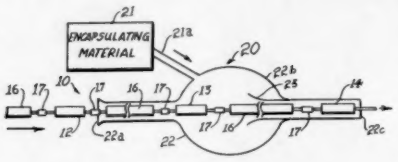
METHOD OF MAKING AN ENCAPSULATED ASSEMBLY

Douglas G. Waltz, Richardson, Tex., assignor to Varo Semiconductor, Inc., Garland, Tex.

Division of Ser. No. 231,311, March 2, 1972. This application Apr. 23, 1973, Ser. No. 353,572

Int. Cl. H01r *43/00*

U.S. Cl. 29—628 **9 Claims**



1. A method of making encapsulated electronic components comprising the steps of: selecting an electronic component including a central body of given, uniform cross-sectional size and shape and a pair of lead wires respectively extending axially from the opposite ends of said body; selecting interconnecting wire members having a cross-sectional size and shape closely corresponding to the cross-sectional size and shape of said central body; joining a said interconnecting wire member substantially end-to-end with each of said lead wires closely adjacent the central body corresponding respectively therewith to produce a serially connected assembly of substantially uniform, cross-sectional size and shape; temporarily locating said assembly in an encapsulation die having a central body portion of substantially uniform internal corss-section; and, during the residence of said assembly in said die, forming a quantity of encapsulating material of substantially uniform thickness over the exterior of said assembly in intimate contact therewith, whereby to provide an encapsulated electronic unit of substantially uniform cross-sectional size throughout its length.

3,845,553

CLAW CLIPPER

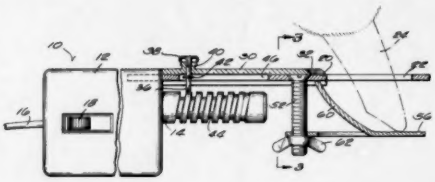
Harold E. Fields, 905-A W. Maple St., Milwaukee, Wis. 53204

Filed Mar. 5, 1973, Ser. No. 338,006

Int. Cl. B26b *15/00;* **B24b** *23/02;* **F16h** *25/12*

U.S. Cl. 30—29 **7 Claims**

1. A clipper comprising an anvil plate having an opening therein for receiving the end of a workpiece to be clipped, a cutting plate slideably mounted in face contact with said anvil plate and having a cutting edge which faces the opening in said anvil plate, said cutting plate being reciprocably slideable with respect to said anvil plate to move said cutting edge across said opening in a cutting stroke to clip the end of said workpiece and then to move said cutting edge in a return stroke to a position in which it is spaced rom said opening, an electric motor mounted in a housing, said anvil plate and siad cutting plate being attached to said motor housing, and reciprocal drive means between said electric motor and said cutting plate for reciprocally sliding the same including single-stroke clutch means for engaging and disengaging said reciprocal drive means, and means to return said cutting plate to its starting position automatically immediately upon disengagement of said single stroke clutch means.



3,845,554

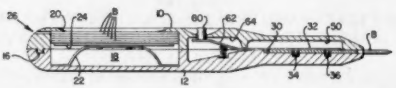
KNIFE BLADE AND HANDLE

Norman R. Jounis, 22 Westwood Dr., and Raymond R. Lavoie, 28 Westwood Dr., both of Wethersfield, Conn. 06604

Filed Apr. 19, 1973, Ser. No. 352,407

Int. Cl. B26b *5/00;* **B25g** *1/08*

U.S. Cl. 30—125 **8 Claims**



1. A holder for a knife blade or the like and comprising in combination;

a. a pair of mating handle parts,

b. one of said parts having an internal blade clamping compartment for receiving a substantial portion of the blade,

c. a leaf spring with a blade engaging portion adapted to overlie a substantial portion of a blade located in said compartment when said spring is in a blade clamping position,

d. said other handle part having an internal spring receptacle for receiving said blade engaging spring portion when the latter is in a blade release position,

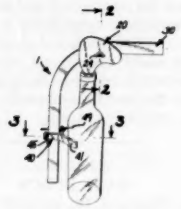
e. said spring having an inner portion opposite said blade engaging portion, and an intermediate portion of said spring abutting said one handle part to define a fulcrum for said leaf spring, and

f. a button projecting through an opening in said other handle part for moving said inner spring portion toward said one handle part and thereby moving said blade engaging portion into said spring receptacle of said other handle part and away from the blade to permit removal of the blade.

3,845,555
BOTTLE CUTTER

James E. Hanson, Anoka, Minn., assignor to Hanson Design, Inc., Anoka, Minn.

Filed Apr. 26, 1973, Ser. No. 354,650
Int. Cl. B26d 3/08
U.S. Cl. 30—164.9 5 Claims

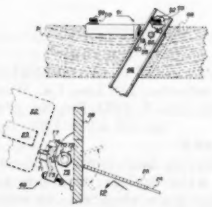


1. A bottle cutter for circumferentially cutting any area of a glass bottle, comprising:
   a. support means for carrying guide means and cutting means in a fixed, spacially separated relationship;
   b. a disc-like guide element carried by said support means, said guide element being movably clamped to said support means and having at least two exterior lobes of unequal size and one interior lobe for selective engagement with the mouth of a bottle to thereby assist in guiding the cutting means for movement along a desired path;
   c. means for cutting the exterior surface of the glass bottle, said cutting means carried by and movable along said support means;
   d. said cutting means including a tapered, nonrotary glass-cutting tip which can cut the glass surface when oriented at substantially any angle thereto; and
   e. said glass-cutting tip rigidly mounted on said cutting means and movable thereon toward and away from the bottle surface to facilitate stable positioning of said cutting means against various sized bottles.

3,845,556
CUT CONTROL ATTACHMENT FOR CHAIN SAWS

Tillson H. Edmunson, 9232 Dunbarton Rd., Santee, Calif. 92071

Filed May 23, 1973, Ser. No. 363,301
Int. Cl. B27b 17/06
U.S. Cl. 30—381 4 Claims

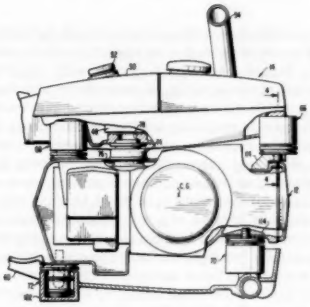


1. A cut control attachment for chain saws comprising:
a chain saw guide bar;
a sole plate having a plurality of apertures and slots therein;
an angularly adjustable guide bar yoke bracket adjustably carried by said sole plate and operable for adjusting a cutting angle of a chain saw in a first plane; and
an adjustable bracket bolt rotatably coupled to said guide bar yoke bracket and said chain saw guide bar for angularly adjusting the chain saw in a second plane substantially ninety degrees removed from said first plane.

3,845,557
CHAIN SAW ANTI-VIBRATION SYSTEM

Jay Richard Bailey, Chatsworth, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed June 28, 1973, Ser. No. 374,490
Int. Cl. B27b 17/02; F16f 7/12
U.S. Cl. 30—381 10 Claims



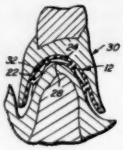
1. In a chain saw having
a vibration generating assembly including engine means; cutter chain means, drivingly connected with said engine; and
a supporting assembly including
handle means; and
a plurality of vibration isolation means interconnecting said vibration generating assembly and said supporting assembly;
wherein the improvement comprises:
each of said vibration isolation means including,
a first cup means mounted upon one of said vibration generating assembly and said supporting assembly;
a post mounted upon the other of said vibration generating assembly and said supporting assembly and being diametrically dimensioned to be freely coaxially inserted within said first cup; and
a second cup means composed of an elastomeric material and being dimensioned to contiguously fit within the interior of said first cup, said second cup having at least one circumferential inwardly projecting ring, said one ring being dimensioned to engage under hoop tension at least a portion of the exterior surface of said post whereby relative vibration between said post and said first cup will be attenuated by said elastomeric second cup;
said first and second cup means and said post of each of said plurality of vibration isolation means each have generally cylindrical side walls; and
another elastomeric circumferential ring, inwardly projecting within said second cup, said ring being axially displaced with respect to said one circumferential ring and being dimensioned to concentrically surround said cylindrical post in a posture normally spaced from said cylindrical post coaxially within said first and second cup means.

3,845,558

DENTURE LINER

Daniel E. Kelly, 2727 N.W. 167th St., Miami, Fla. 33169; Robert W. Theed, 9010 S.W. 77th Ave., South Miami, Fla. 33156, and Martin Beckerman, 2734 N.W. 183rd St., North Miami Beach, Fla. 33169

Filed Aug. 6, 1973, Ser. No. 385,799
Int. Cl. B61c *13/24*
U.S. Cl. 32—3 **17 Claims**



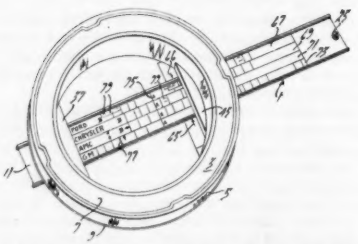
1. In combination with a denture plate including one side adapted to oppose gum tissues against which the plate is to be seated, a denture liner including a plurality of panel portions, each panel portion including a generally smooth outer side for opposing and direct contact with a wetted gum tissue area and an opposite side opposing said one side of said plate, each panel portion including a centrally disposed integral stem portion projecting outwardly from said opposite side thereof and anchored, at its end remote from said panel portion, to said one side of said plate, said panel portions and said stems being integrally formed of a soft, flexible and resilient material, said outer sides of said panel portions being of a contour for sustantially full light surface-to-surface contact with opposing wetted gum tissue surfaces to the exclusion of substantially all air from between said gum tissue surfaces and said outer sides and independent of negative pressures being formed between said outer sides and said gum tissue surfaces.

3,845,559

FILTER ELEMENT SELECTOR

Robert J. Offer, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed Aug. 7, 1972, Ser. No. 278,609
Int. Cl. G01b *5/00*
U.S. Cl. 33—143 M **9 Claims**



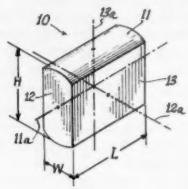
1. A selector device for measuring first, second, and third dimensions of an element and for indicating the model number of said element in accordance with the measurement of said dimensions comprising measuring means for respectively and separately measuring each of said first, second, and third dimensions of said element, pointer means operated by said measuring means for indicating the magnitude of a measurement, and scale means containing rows of model numbers, said scale means comprising first, second, and third divisions of model numbers in said rows, said first division containing all of said model numbers and the positions of said model numbers on the first division of said scale means being in accordance with the magnitude of the first dimension of an element as determined by the measuring means, said second division containing each model number of element that has a dimension in common with another model number and the positions of said model numbers on the second division of said scale means being in accordance with the magnitude of the second dimension of an element as determined by the measuring means, said third division containing each model number of element that has two dimensions in common with another model number and the positions of said model numbers on the third division of said scale means being in accordance with the magnitude of the third dimension of an element as determined by the measuring means, said pointer means and the positions of the model numbers in said rows being arranged and cooperating to indicate the model numbers having the dimensions measured by the measuring means.

3,845,560

GAGE BLOCK

Peter J. Sommer, Elmhurst, Ill., assignor to American Gage & Machine Company, Elgin, Ill.

Filed July 18, 1973, Ser. No. 380,383
Int. Cl. G01b *3/30*
U.S. Cl. 33—168 R **1 Claim**



1. A gage block,
comprising a block having first, second and third pairs of diametrically opposite gaging surfaces extending precisely parallel to first, second and third rectangularly related axes,
said first pair of surfaces being cylindrically curved and constituting uninterrupted segments of a cylindrical surface centered about said first axis,
said second pair of surfaces being in the form of uninterrupted, precisely parallel and flat plane gaging surfaces extending perpendicular to said first axis,
said third pair of surfaces being in the form of uninterrupted precisely parallel and flat plane gaging surfaces which are rectangularly related to said second pair of surfaces,
said surfaces of said third pair being symmetrically disposed on opposite sides of said first axis and precisely parallel thereto.

3,845,561

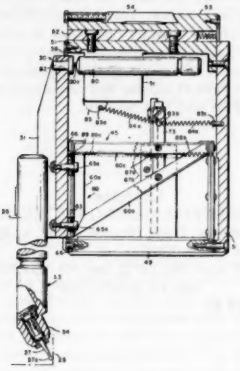
MEASURING HEAD SYSTEM

Waldemar J. Elsdoerfer, 235 Love Ln., Warwick, R.I. 02886

Filed June 5, 1972, Ser. No. 259,734
Int. Cl. G01b *5/04*
U.S. Cl. 33—169 R **1 Claim**

1. In a measuring head apparatus for the inspection of machine parts which includes a sensing assembly having a probe for engaging a workpiece to be measured by moving relative thereto, a base, a parallelogram assembly including a leaf spring system which is supported by the base, and a plurality of support members coupled to the spring system, said support members supporting the sensing assembly therefrom, the improvement comprising fluidic damping means which includes a reservoir supported by the base means, a restrictor supported by the parallelogram assembly support members

and which has a portion thereof which extends into the reservoir and moves therein as a paddle with the motion of the parallelogram assembly and the probe, said reservoir containing fluid and said restrictor extending below the level of said fluid, and adjustable means coupling the restrictor to said parallelogram assembly to adjust the extent to which the restrictor extends into the fluid in the reservoir.

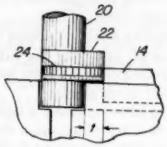


3,845,562

METHOD AND APPARATUS FOR DETERMINING THE THICKNESS OF A GAP BETWEEN ELEMENTS

Charles G. Dallas, Westville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 16, 1973, Ser. No. 388,877
Int. Cl. G01b *5/14*
U.S. Cl. 33—169 R **1 Claim**



1. A method for determining the thickness of a gap between the end of the side seal and its corresponding cylindrical corner seal positioned in the rotor of a rotary engine which comprises,

a. setting one end of a side seal against its corresponding cylindrical corner seal,

b. setting the cylindrical end of a micrometer gauge provided with a graduating circular cam spaced apart from said cylindrical end thereof in a cylindrical aperture in said rotor for said cylindrical corner seal at the opposite end of said side seal,

c. rotating said micrometer gauge in said cylindrical aperture until the surface of said graduating cam engages the end of said side seal and

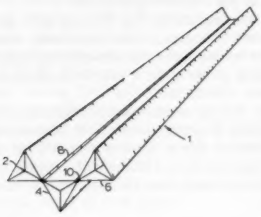
d. reading directly from said graduating cam the thickness of the gap between said cylindrical aperture and the end of said side seal.

3,845,563

ENGINEERS

Umeyuki Taniquchi, 45-1040 D Wailele Rd., Kaneohe, Hawaii 96744

Filed Oct. 2, 1972, Ser. No. 294,388
Int. Cl. G01b *3/06*
U.S. Cl. 33—107 **7 Claims**



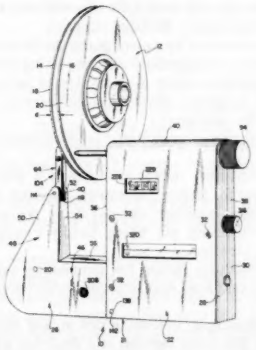
1. An engineer-architect's scale apparatus comprising first and second elongated scales having a plurality of longitudinal edges and having generally equilateral triangular cross-sections, unique related linear scale markings along the longitudinal edges and hinge means connected to longitudinal edges of the first and second scales, further comprising a third elongated scale coextensive with the first and second scales having a plurality of longitudinal edges having a equilateral triangular cross section and having unique scale markings along the longitudinal edges, and second hinge means connected to corresponding longitudinal edges of the first and third scales, thereby joining the first, second and third scales in a single foldable and reorientable unit.

3,845,564

MICROMETER WITH MOVABLE ANVIL

Paul A. Morgan, Chicago, Ill., assignor to Century Wheels, Inc., Lake Bluff, Ill.

Continuation-in-part of Ser. No. 238,340, March 27, 1972. This application Oct. 5, 1972, Ser. No. 295,225
Int. Cl. G01b *3/18, 5/00*
U.S. Cl. 33—164 R **27 Claims**



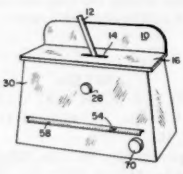
1. A micrometer for measuring a workpiece comprising:

a. a frame having an anvil mounting section and a spindle mounting section, the anvil mounting section being connected to the spindle mounting section for relative movement thereto;

b. a spindle mounted in said spindle mounting section for axial movement;

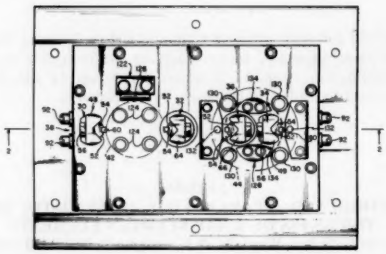
c. an anvil means mounted to said anvil mounting section and movable relative to said spindle and anvil mounting sections from a non-measuring position to a measuring position upon the creation of a gauging pressure by a workpiece that is being measured between the anvil means and the spindle;
d. indicating means responsive to the relative movement of the anvil means for indicating movement of said anvil means to the measuring position;
e. a first biasing means for biasing said anvil means for movement relative to said mounting sections and for maintaining the same amount of gauging pressure at said measuring position for each measurement that the micrometer makes; and
f. a second biasing means connecting said mounting section and spindle mounting section for controlling the relative movement of the anvil mounting section to the spindle mounting section and absorbing gauging pressure in excess of that which can be absorbed by said first biasing means.

3,845,565
ANGLE MEASURING DEVICE
Paul S. Newswanger, 1401 Vermont Ave., Lancaster, Pa. 71200
Filed Aug. 20, 1971, Ser. No. 173,597
Int. Cl. G01b *5/24, 3/56*
U.S. Cl. 33—174 R **6 Claims**



1. A device for measuring and setting angles comprising
A. a frame including a fixed support;
B. a horizontally disposed scale of rectilinear shape affixed to the frame below the fixed support;
C. an arm connected by a pivot pin to the fixed support, said arm having a longitudinal axis and being pivotable from a first position which is vertical to a second position, which is angularly offset from the vertical, through an angle to be measured,
D. an indicating means mounted for movement adjacent the scale,
1. the indicating means comprising a sliding member mounted for sliding movement, a pointer connected to the sliding member and overlying the scale, and an interconnecting pin being fixedly connected to the sliding member;
E. interconnection means for connecting said indicating means to said arm, said interconnection means comprising,
1. a longitudinally extending slot in said arm,
a. said slot being tapered in a direction away from the pivot pin,
2. the interconnecting pin extending into said slot,
a. the portion of said interconnecting pin which extends into the slot having opposed edges that engage opposed longitudinally extending walls of the slot throughout the entire movement of the arm from the first position to the second position,
F. angle setting means for pivoting said arm both clockwise and counterclockwise,
1. said angle setting means comprising a chain and a pair of spaced, freely rotatable sprockets mounted on said frame, said chain being disposed in a loop about the sprockets,
a. said chain having opposed ends, connecting means for fastening said opposed ends to opposite sides of the slide member, and means connected to the sprockets for rotating said chain in a clockwise and a counterclockwise direction for traversing the slide in opposite directions to thereby pivot the swinging arm in both clockwise and counterclockwise directions from said first position.

3,845,566
DIFFERENTIAL GAGING INSTRUMENT
William W. Rameson, Santa Monica, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Mar. 30, 1972, Ser. No. 239,558
Int. Cl. B23f *23/08*
U.S. Cl. 33—174 L **4 Claims**

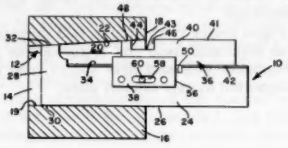


1. A gaging instrument for comparing selected dimensions of two work parts, comprising:
a mounting base having a top plate;
first and second carriages mounted on said base below said top plate for independent movement relative to one another and to said base along direction lines parallel to one another and to said plate;
each carriage including a jaw mounting plate, said carriage plates being located one over the other below said top plate with the second carriage plate located between said top plate and first carriage plate;
a first pair of gaging jaws including a stationary jaw fixed to and rising from said top plate and a movable jaw fixed to said first carriage plate and rising from said first carriage through openings in said second carriage plate and top plate for movement of said movable jaw toward and away from said stationary jaw by movement of said first carriage along its direction line of movement;
a second pair of gaging jaws including a stationary jaw fixed to and rising from said top plate and a movable jaw fixed to said second carriage plate and rising from said second carriage through an opening is said top plate for movement of said latter movable jaw toward and away from said latter stationary jaws by movement of said second carriage along its direction line of movement;
the upper ends of said jaws projecting above said plate and having work engaging surfaces;
means on said top plate for supporting said parts in gaging relation to said jaw pairs, respectively; and
transducer means including relatively movable members on said carriages, respectively, for generating an electrical signal representing the relative positions of said members parallel to said direction lines.

3,845,567
TAPERED KEYWAY CHECKING GAUGE

Robert Allen Johnson, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 3, 1973, Ser. No. 421,343
Int. Cl. G01b *5/24, 3/46, 3/56*
U.S. Cl. 33—174 E **10 Claims**

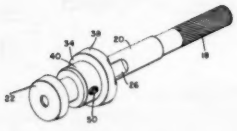


1. A gauge for checking a tapered keyway along a bore in a member having a surface adjacent the keyway opening, the keyway having a tapered wall inclined relative to the sidewall of the bore opposite the keyway, said gauge comprising: an elongated body insertable lengthwise into the bore and engageable with the sidewall of the bore opposite the keyway; a first gauge element connected to the body and having a first surface engageable with said bore sidewall opposite the keyway and a second surface opposite the first surface and engageable with the tapered wall of the keyway to establish a set position of the body in the bore and keyway; a second gauge element mounted on the body for limited shifting thereon in a longitudinal direction parallel to the axis of the bore and including a gauging surface engageable with the tapered wall of the keyway in response to longitudinal shifting of the second gauge element on the body when the body is in said set position, the second gauge element having first and second longitudinally spaced indicator means adjacent the surface of said member and respectively defining the opposite acceptable positions of the second gauge element relative to said surface to indicate the acceptable keyway heights adjacent said surface, the second gauge element having an indicator element and the body having third and fourth indicator means adjacent said indicator element respectively defining the opposite limits of acceptable longitudinal positions of the second gauge element relative to the body to indicate the limits of the angle of the tapered wall of the keyway.

3,845,568
TAPERED BORE CHECKING GAUGE

Robert Allen Johnson, and Wesley Paul Raisbeck, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 3, 1973, Ser. No. 421,344
Int. Cl. G01b *5/24, 3/46, 3/56*
U.S. Cl. 33—174 E **10 Claims**

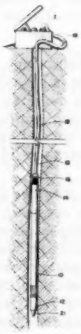


1. A gauge for checking the internal taper on a bore whose axis extends at right angles from a flat surface and comprising: an elongated body including a generally cylindrical central portion having a lesser diameter than the diameter of the bore and insertable therein; a first gauge element attached to the body adjacent to said portion and having contact surfaces lying in a circular array and forming an outer surface engageable with the bore to hold the body in a set axial position relative to the bore; an annular second gauge element coaxially mounted on said central portion and axially shiftable thereon to a limited degree, said second gauge element having contact surfaces lying in a circular array and forming an outer surface engageable with the bore adjacent said flat surface when the body is in said set position by axially shifting the second gauge element on the central portion, said second gauge element including first and second axially spaced indicator means on the outer surface adjacent to said flat surface, the location of the flat surface between said first and second indicator means when the second gauge element engages the bore indicating an acceptable bore base plane position, said second gauge element having a radial end surface and the central portion having third and fourth axially spaced indicator means adjacent said end surface, said end surface being disposed between said third and fourth indicator means when the second gauge element is within acceptable axial positions relative to the central portion, the said axial position of the second gauge element relative to the central portion being responsive to the angle of bore taper.

3,845,569
BORE HOLE LOGGING DEVICE

Hubert Josef Otte, and Gosta Roosman, both of Toronto, Ontario, Canada, assignors to Selco Mining Corporation Limited

Filed Feb. 9, 1972, Ser. No. 224,861
Int. Cl. G01c *19/28, 9/06, 9/16*
U.S. Cl. 33—312 **16 Claims**



1. A bore hole logging device of the type which is intended to be introduced into a bore hole, and passed therealong to determine the attitude of the bore hole at spaced intervals, without repeatedly withdrawing the device from the bore hole to obtain readings at each station therealong, said device comprising:

casing means adapted to be attached to means such as a cable, drill rods or the like, said casing defining a longitudinal axis;

mounting means movably located within said casing, and being rotatable about said longitudinal axis of said casing freely and independently of movement of said casing, said mounting means being constructed and weighted to define a centre of gravity thereof offset with respect to said longitudinal axis, whereby to bias said mounting means into a predetermined orientation with respect thereof when said longitudinal axis is appreciably inclined relative to the vertical;

inclination pendulum means mounted on said mounting means, said pendulum means being swingable about a swing axis transverse to said longitudinal axis of said device, and so located that said swing axis of said pendulum is normally located horizontal when said mounting

means is located in said predetermined orientation;

sensing means associated with said inclination pendulumfor sensing the inclination thereof relative to said mounting means, thereby to determine the inclination of said logging device within a bore hole;

secondary reference pendulum means mounted on said mounting means, and swingable about a swing axis coincident with the longitudinal axis of said device, and sensing means for sensing the position thereof with reference to said mounting means, thereby to provide a check on the rotational position of said mounting means.

3,845,570

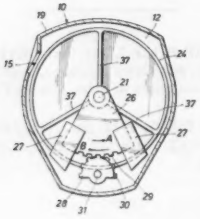
INCLINOMETER

Wilbur Green, 116 Ruby Ln., McAllen, Tex. 78501

Filed Oct. 1, 1973, Ser. No. 402,307

Int. Cl. G06k *9/12*

U.S. Cl. 33—401 **9 Claims**



1. An inclinometer, comprising

a housing having a pair of spaced apertures,

a pair of meter wheels mounted for rotation about a first axis within said housing and having a series of numerals imprinted about the rims of said wheels and observable through respective ones of said housing apertures as said meter wheels rotate,

a gravity actuated gear mounted for rotation about said first axis and adapted to rotate in opposite directions with respect to said housing in response to inclination of said housing either upwardly or downwardly,

a pair of spaced axle gears mounted for rotation about a second axis within said housing, one of said axle gears adapted for engaging said gravity actuated gear only when said gravity actuated gear rotates in one direction, the other of said axle gears adapted for engaging said gravity actuated gear only when said gravity actuated gear rotates in the opposite direction,

a pair of spaced drive gears mounted for rotation about said second axis and each attached to one of said axle gears for rotation therewith, and

a pair of spaced meter wheel gears each attached to one of said meter wheels and rotatable therewith about said first axis, each of said meter wheel gears engaging one of said drive gears for rotating one of said meter wheels in response to rotation of said gravity actuated gear for indicating the degree of inclination of said housing.

3,845,571

SIMULATOR FOR SHIP NAVIGATION

Rene Hervieu, 20, rue du Calvaire, 44000 Nantes, France

Filed Apr. 16, 1973, Ser. No. 351,470

Claims priority, application France, Apr. 21, 1972, 72.14754

Int. Cl. G09b *9/06*

U.S. Cl. 35—10.2 **12 Claims**

1. A device for simulating navigation, said device comprising:

a. a cylindrical screen for projecting images thereon, said images simulating the position of observed objects relative to an observer,

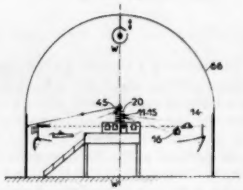
b. a rotatable support plate,

c. a plurality of image means connected to said support plate and rotatable therewith,

d. image projecting means mounted on said support plate and rotatable therewith, said image projecting means comprising:

1. a light source connected to said support plate,

2. an adjustable focal line objective lens positioned for alignment with said light source, said objective lens supported by said support plate,



e. means for rotating said support plate for projecting images at various angles about the rotation axis of said rotatable support plate,

f. means for adjusting the magnification of said focal line objective lens thereby providing projected images of a variable size, and

g. means for successively positioning different ones of said plurality of image means for projection by said aligned light source and objective lens, whereby different projected images may be displayed simulating different orientations of the observed object relative to the observer.

3,845,572

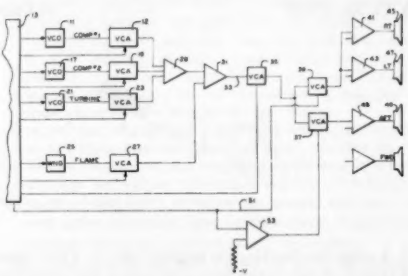
MODULAR VEHICLE TRAINER SOUND SYSTEM HAVING A PLURALITY OF SEPARATELY CONTROLLABLE SOUND GENERATORS AND A POLYPHONIC SPEAKER ARRAY

Neil R. McCanney, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,395

Int. Cl. G09b *9/02*

U.S. Cl. 35—11 **12 Claims**



1. A sound system for use with a vehicle simulator for providing a plurality of identifiable sounds associated with mechanical devices of the simulated vehicle comprising:

a plurality of amplitude controllable signal generator means, each of said signal generator means providing

signals representative of an identifiable sound associated with a mechanical device of a vehicle to be simulated;

summing means responsive to each of said signals provided by said plurality of amplitude controllable signal generator means for providing a first composite signal representative of the sum of said identifiable sounds;

apportioning means responsive to first control signal inputs for receiving said first composite signal and for providing a plurality of second composite signals similar to said first composite signal, the magnitude of said second composite signals being selectively apportioned in accordance with said control signal inputs;

a trainee station representative of the control station or cockpit of the vehicle being simulated, said trainee station including a plurality of electro-acoustic devices equal in number to said plurality of second composite signals and spaced around said trainee station, each electro-acoustic device connected for generating sounds in response to one of said second composite signals; mathematical model means to provide a sound profile of the simulated vehicle and to control a plurality of amplitude controllable signal generator means; and

control means for providing said first control signal inputs to said apportioning means, said control signal inputs being generated in response to signals representative of the operation of the vehicle simulator and in accordance with said mathematical model means such that at least one of said identifiable sounds provided by at least two of said electro-acoustic devices has the semblance of originating from a particular location around the trainee station different from the location of any of said electro-acoustic devices.

3,845,573

APPARATUS FOR ASSEMBLING ELECTRICAL CIRCUITS FOR EXPERIMENTATION

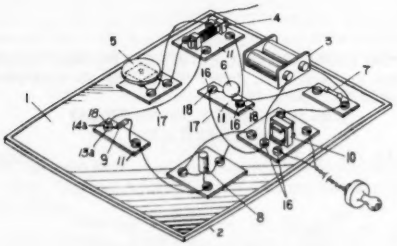
Takuo Kasamatsu, No. 4, 78 Mikazura, Wakayama, Japan

Filed Nov. 19, 1973, Ser. No. 417,405

Claims priority, application Japan, Nov. 17, 1972, 47-132910

Int. Cl. G09b *23/18*

U.S. Cl. 35—19 A **7 Claims**



1. An apparatus for assembling electrical circuits for experimentation; comprising, in combination: an electrically insulating base plate for supporting on one of its surfaces discrete electronic parts which constitute the electrical circuits; each of said parts having at least two wires connected thereto and extending therefrom; small metal pieces constituting terminals for said parts at the ends of said wires; a metal plate substantially coextensive with and adjoining said base plate; block-shaped metal pieces corresponding in number to that of said terminals; jumper leads having at least two metal terminals of a small size, adapted to fit unto said metal pieces, for electrically interconnecting at least two of said terminals; and magnet means constituted by at least one of said metal plate and said block-shaped pieces, for holding together by magnetic attraction said metal pieces, said metal plate, said block-shaped pieces and said jumper terminals when said parts are positioned on said base plate, and thereby constituting the electrical circuits; said metal pieces, said jumper terminals, as well as the remaining ones of said metal plate and said block-shaped pieces being of a material responding to magnetic attraction by said magnet means.

3,845,574

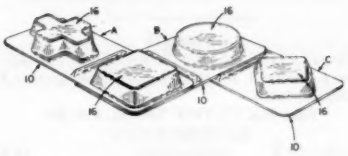
EDUCATIONAL GAME TYPE TOY

Eugene J. Majewski, 121 N. Elmore Ave., Park Ridge, Ill. 60068

Filed July 26, 1973, Ser. No. 382,775

Int. Cl. G09b *1/36*

U.S. Cl. 35—72 **8 Claims**



1. In an educational game type toy for teaching the recognition of elementary configurations such as geometric designs, letters, numbers, and the like, a plurality of interlocking members, each comprising:

a. a relatively thin, flat, oblong base plate having a pair of opposed, integral end sections;

b. each of said end sections including a hollow, raised element having a particular configuration selected from a set of related configurations having a common theme;

c. the hollow raised elements of the end sections of each member having configurations different from each other;

d. the raised elements on the end sections of the members each being contoured so as to nest only with another raised element of identical configuration to provide an overlapping, interlocking fit between matching end sections of related members.

3,845,575

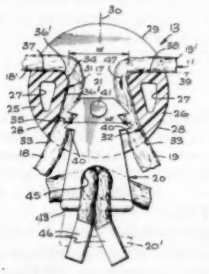
CORD LOCKING ASSEMBLY

Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001

Filed May 7, 1973, Ser. No. 357,851

Int. Cl. A43b *11/00;* **F16g** *11/04*

U.S. Cl. 36—50 **9 Claims**



1. A cord fastener comprising a body containing a passage through which a pair of cords are to extend and having a first end facing in a first direction and a second end facing in a

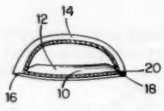
second essentially opposite direction, said passage having two opposite side walls forming a locking restriction, a relatively movable locking unit received at least partially within said passage and adapted to be received between said cords and to clamp them outwardly against said opposite side walls of said passage in a relation locking said cords against longitudinal movement in said first direction, said body being constructed to pass said two cords laterally from said first end of said passage in two opposite lateral directions respectively, said body having surfaces facing generally in said first direction for engaging said cords respectively as they extend laterally from said first end of the passage to take forces exerted longitudinally on said cords, said body having shoulders which are also positioned to engage said cords as they extend laterally from said first end of said passage and which project in said first direction beyond said last mentioned surfaces and at locations to be pressed by said cords toward an adjacent structure and thereby hold said body essentially flat thereagainst.

3,845,576

PROTECTIVE DEVICE FOR SAFETY SHOES

Raymond J. Howland, Jr., Windham, N.H., assignor to Safety, Inc., Boston, Mass.

Filed Jan. 17, 1974, Ser. No. 434,267
Int. Cl. A43c *13/14*
U.S. Cl. 36—77 R **14 Claims**



1. A protective device for insertion and use in safety footwear, which device comprises in combination:

a unitary one piece of hard stiff sheet material comprising a sole-protecting portion and a toe-protecting portion,

i. the toe-protecting portion characterized by open front and rear ends, and comprising at least one integrally joined extending element along one edge of the sole-protecting portion, the toe-protecting element having at least one foot-contoured outer edge adjacent to an outer foot-contoured edge of the sole-protecting portion, and formed into an integral toe-protecting arch extending across the sole-protecting portion,

ii. the sole-protecting portion having at least one complimentary shaped outer edge with the said outer edge of the toe-protecting element, and

iii. means to join the outer edge of the toe-protecting element to the complimentary outer edge of the sole-protecting portion, thereby forming a protective device having a unitary sole-protecting portion and a unitary toe-protecting portion characterized by open front and rear ends.

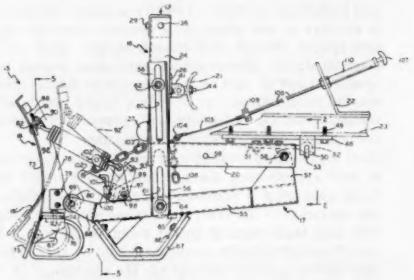
3,845,577

LIGHTWEIGHT SNOWPLOW FOR QUICK ATTACHMENT TO SMALL VEHICLE

Michael M. Naymik, 300 Beattie St., Syracuse, N.Y. 13224

Filed Nov. 23, 1973, Ser. No. 418,445
Int. Cl. E01h *5/04*
U.S. Cl. 37—42 VL **14 Claims**

1. A lightweight snowplow for small vehicles having a front bumper and parallel longitudinally extending frame members, comprising: a plow support frame, the frame hving an upright generally rectangular portion secured to the vehicle bumper and an integral horizontal trailing arm at each side secured to a vehicle frame member, a like forwardly extending pusher bar at each side pivotally secured for up and down movement to the frame arm, a substantially vertical slide member at each side having an upper slot and an aligned lower slot pivotally secured by bolt means extending transversely from the frame rectangular portion through the upper slot for slidingly securing the slide member to the support frame, the pusher bar at each side having bolt means extending transversely therethrough and through the slide member lower slot for slidingly securing the pusher bar to the slide member, each pusher bar having a depending skid attached thereto adjacent its forward end, a substantially transversely extending lightweight plow blade in advance of the pusher bars, a depending skid secured to the blade adjacent each end, the blade having a substantially vertically extending and rearwardly projecting reinforcing rib secured thereto at each side of its center and aligned



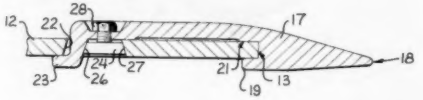
with a respective pusher bar, the pusher bar and rib having a pivotal connection arranged for pivotal movement of the blade about a horizontal axis, a coil spring having one end connected to the blade adjacent each rib, an upstanding spring bracket secured to each pusher bar, the spring other end being secured to the bracket, the pivotal connection between blade and pusher bar being in the lower third of the heighth of the blade and the connection betwen blade and spring being in the upper third of the heighth of the blade, whereby the springs are elongated under tension when the blade is tripped by meeting an obstruction in the roadway and the blade is movable vertically with respect to the support frame by movement of the bolt means in the slots of the slide member.

3,845,578

REPLACEABLE CUTTING EDGE WITH PLURAL TANGS

William L. Holmstrom, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 15, 1973, Ser. No. 370,203
Int. Cl. E02f *9/28*
U.S. Cl. 37—141 R **4 Claims**



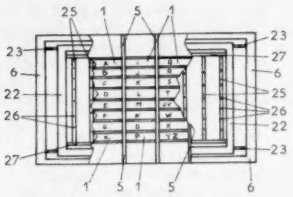
1. A replaceable cutting member for a material handling implement including plate means forming a forwardly facing leading edge for the implement, a plurality of openings being formed in the plate means rearwardly of the leading edge, the cutting member forming an elongated cutting edge and a slot facing away from the cutting edge to receive the leading edge of the plate means, the cutting member having downwardly and rearwardly extending tangs for penetrating the respective openings in the plates means, tapered means engaging the plate means and cutting member to urge the leading edge of the plate means into the slot and to simultaneously urge the

tangs rearwardly into locking engagement with the holes of the plate means.

3,845,579
SELECTIVE INDEX DEVICE

Michel Schimmerling, 30 rue de La Liberta, Lingolsheim, France

Filed Nov. 3, 1972, Ser. No. 303,428
Claims priority, application France, Nov. 10, 1971, 71.41224
Int. Cl. G09f *11/30*
U.S. Cl. 40—78 **6 Claims**



1. A selective display device, comprising a first fixed rectangular frame disposed in a vertical plane, means whereby a plurality of equally spaced and substantially elongated rectangular flaps are pivotably, disposed in a vertically aligned series in said first frame in a common plane parallel to the plane of said first frame, said flaps having recesses therein at least some of which recesses occupy different positions among the various flaps, said recesses being disposed in the same side of each flap, a second rectangular frame smaller than said first frame and having means for sliding horizontally between the opposed edges of said first frame in a plane parallel to the plane of said first frame, and a third frame having means whereby it is carried by and slidable vertically between the opposite edges of said second frame in a plane parallel to the plane of said first frame and having a said plurality of equispaced projections thereon that are adapted to selectively contact a portion of at least one of said flaps along said side and adjacent said recesses while passing through a recess of at least another of said flaps so that upon vertical actuation of said third frame the projections contact and thereby pivot said at least one flap while leaving said at least another flap stationary thereby selectively pivoting said flaps according to the location of said recesses on said flaps.

3,845,580
CALENDAR

Karl Hermann Ritter, Sachsenstrasse 5, and Johannes Andreas Ritter, Thuringerstrasse 5, both of 61 Darmstadt-Eberstadt, Germany

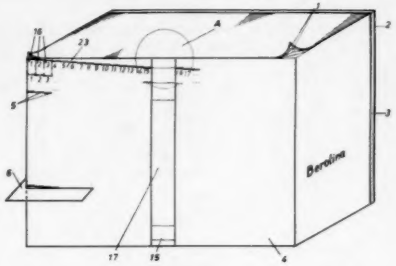
Filed Apr. 9, 1973, Ser. No. 349,000
Claims priority, application Germany, Apr. 12, 1972, 2217510
Int. Cl. G09d *3/04*
U.S. Cl. 40—121 **4 Claims**

1. A combination note pad and calendar, comprising

a stack of horizontal coextensive superposed paper sheets having a height at least equal to a major edge dimension of the sheets and formed with a vertical cut surface extending along said major dimension;

adhesive means extending along another vertical cut surface of the stack to connect said sheets thereto such that successively uppermost sheets can be successively torn from said stack to expose the next lower sheet and thereby diminish the height of the first mentioned surface; and

calendar indicia for a plurality of months printed on said first mentioned surface and extending substantially over the entire area thereof, said calendar indicia including rows of day numerals representing calendar weeks and vertically and horizontally staggered on said surface

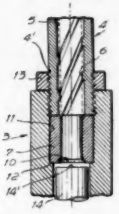


whereby successive removal of the sheets will progressively eliminate earlier weeks of a month from the calendar indicia of said first surface.

3,845,581
FIREARMS

Osvaldo Cesar Infantino, Buenos Aires, Argentina, assignor to Direccion General de Investigacion y Desarrollo (DIGID), Ministerio de Defensa de la Republica Argentina, Buenos Aires, Argentina

Filed July 6, 1972, Ser. No. 269,325
Claims priority, application Argentina, July 6, 1971, 236638
Int. Cl. F41c *21/12*
U.S. Cl. 42—76 R **4 Claims**



1. A firearm comprising a barrel including a bore having helical grooves and lands between said grooves, and a detachable chamber comprising a tubular body having an inner diameter equal to the diameter of said bore across the lands defined by the helical grooves, one end of said tubular body abutting against the base of said barrel, and the other end having an annular recess adapted to receive and retain a peripheral flange at the rear end of a projectile adapted to be fired from said firearm.

3,845,582
CONTROL DEVICE FOR GAS BURNER

Marcel Capy, Olivet, France, assignor to Compagnie Europeene Pour L'Equipment Menager CEPEM, Paris, France

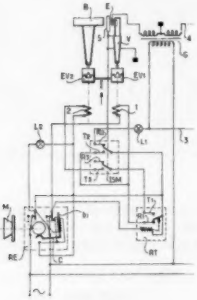
Filed Mar. 2, 1973, Ser. No. 337,500
Claims priority, application France, Mar. 3, 1972, 72.07474; June 20, 1972, 72.22118
Int. Cl. F23c *3/02*
U.S. Cl. 43—1 **7 Claims**

1. In a gas burner system including a main burner and a pilot burner for lighting said main burner, a safety device for controlling said main burner comprising:

a first gas inlet electro-valve for supplying gas to said main burner,

a safety invertor including switch means and heat responsive means in close proximity to said pilot burner for operating said switch means in response to a pilot flame, a time delay switch, and

energy regulator means connected to energize said first gas inlet electro-valve through said time delay switch and said



safety invertor switch means, said energy regulator means including electrically heated bi-metallic switch means for intermittently opening and closing the circuit to said first gas inlet electro-valve, thereby adjusting the heating rate of said main burner by alternately lighting and extinguishing said main burner in a cyclic manner, said time delay switch being continuously energized through said energy regulator means when it is turned on.

3,845,583

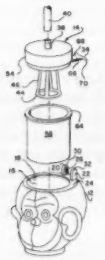
BUBBLE BLOWING DEVICE

Louis J. Ziff, Philadelphia, Pa., assignor to Larami Corporation, Philadelphia, Pa.

Filed May 21, 1973, Ser. No. 362,528

Int. Cl. A63h *33/28*

U.S. Cl. 46—7 **7 Claims**



1. In a bubble blowing device, the combination of

A. holder of generally hollow configuration to receive soap solution,

1. said holder being provided with a top opening and a top surface surrounding the opening;

B. a pair of opposed first and second hinge members projecting upwardly from the holder,

1. said hinge members being each provided with an elongated vertical recess, the said vertical recesses having open fronts and closed backs,

a. the said open fronts and closed backs facing each other;

C. a cap pivotally connected to the holder and movable from a closed position to an open position,

1. said cap closing the said top opening of the holder when in the closed position,

2. said cap carrying an outwardly extending strap,

3. said strap terminating outwardly in a pair of opposed, transverse, first and second pin members,

a. said pin members being integral with the strap and having opposed ends,

b. each said pin member inserting into one said vertical recess to permit the cap to pivot relative to the holder,

c. the distance between the ends of the pin members being greater than the clear distance between the hinge members and being substantially equal to the distance between the closed backs of the vertical recesses;

D. bubble blowing means to produce bubbles from the soap solution,

1. said bubble blowing means including a ring which is spaced from the cap and which extends into the holder when the cap is in the closed position,

2. said cap being provided with an opening to direct air through the ring for bubble blowing purposes when the cap is pivoted to the open position.

3,845,584

GROWING OF GRASSES

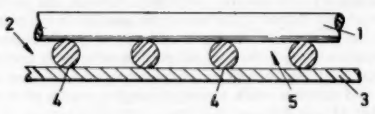
Frank Brian Mercer, Blackburn, England, assignor to F. B. Mercer, Limited, Blackburn, England

Filed May 2, 1973, Ser. No. 356,426

Claims priority, application Great Britain, May 4, 1972, 20739/72

Int. Cl. A01g *1/00*

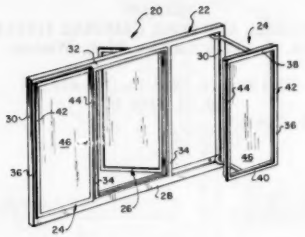
U.S. Cl. 47—56 **3 Claims**



1. A method of producing a grass-bearing lamina comprising providing a laminated structure having a first sheet of flexible reticulate material prebonded or prelaminated to a second sheet or film of flexible, substantially water and root impermeable material, said first sheet comprising a first set of parallel strands and a second set of parallel strands extending transversely thereof and bonded thereto, the space between the second sheet and said second set of strands being sufficient to permit root growth therein, distributing over the surface of said flexible reticulate sheet a layer of rooting medium and an adequate quantity of grass seed and subjecting the lamina to correct conditions of light, heat and moisture to promote germination whereby the conducting roots from each seed grow through the layer of rooting medium and through the meshes of said reticulate material so that the root system so produced bonds the rooting medium and the reticulate material sheet into a coherent unit of flexible laminate structure having at one surface growing grass blades and at the other surface (after removal from the impermeable surface) a root structure, wherein the flexible reticulate sheet material is pre-bonded or pre-laminated to the sheet or flim of flexible impermeable material at a plurality of spaced localized points, areas or lines of adhesion whereby the reticulate sheet material is maintained in close or intimate contact with the adjacent surface of the impermeable sheet material while allowing access to the grass roots to find their way between the two

sheets between the localized adhesion points, areas or lines, said second sheet being separable from said first sheet following a predetermined growth period.

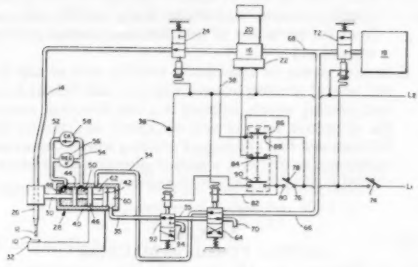
3,845,585
CASEMENT WINDOW
Florence A. Cecil, 7309 W. Hampden, Denver, Colo.
Filed Dec. 18, 1972, Ser. No. 316,082
Int. Cl. E05f *15/12*
U.S. Cl. 49—139 **4 Claims**



1. In a window assembly including a rectangular window sash in which a pane of glass is retained, a hollow window frame member along one side of the window sash, the window sash being pivotally mounted along one side to the hollow frame member, the improvement comprising an elongated pivot shaft disposed longitudinally in said hollow frame member, said pivot shaft being journalled in the window frame for pivotal movement about its longitudinal axis, a pair of axially spaced flat hinge members fixedly secured to and concentric with the pivot shaft adjacent opposite ends of the window sash for unitary pivotal movement with the pivot shaft, said hinge members having a substantially semi-circular portion, a lever portion rigidly interconnecting one end of the semi-circular portion with the pivot shaft, and an attachment extension extending radially away from the other end of the semi-circular portion so as to lie closely adjacent and parallel to the said opposite ends of the window sash, slots in the hollow frame member through which the semi-circular portion of the hinge member protrude so that the attachment extension lies wholly outside the hollow frame member, pivotal connection means for pivotally connecting the end of the attachment extension furthest removed from the semi-circular portion of the hinge member to an intermediate portion of the associated end of the window sash so that the window sash is pivotal about an axis passing through the pivotal connection means, ball-detent mechanisms operatively interconnecting the attachment extension portion of the hinge members to the associated ends of the window sash at locations between said pivotal connection means and the semi-circular portion of the hinge members, and drive means in operative engagement with the pivot shaft to effect pivotal movement of the pivot shaft whereby the window is moved between open and closed positions.

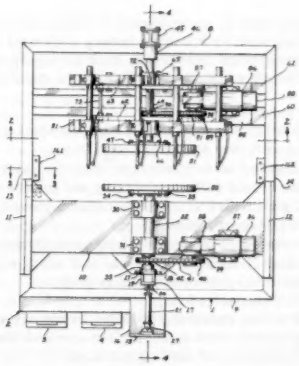
3,845,586
ABRADING APPARATUS
John William Callahan, Lanoka Harbor, N.J., and Martin John Capdeville, Staten Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed May 15, 1973, Ser. No. 360,496
Int. Cl. B24c *3/04, 3/32*
U.S. Cl. 51—12 **9 Claims**

1. In apparatus for adjusting the electrical value of an electrical element by abrasion, including a pressurized air supply, an abrasive powder supply, a device connected to said air supply and said powder supply for mixing pressurized air and abrasive powder to provide a stream of airborne abrasive powder, a nozzle for directing said stream at an electrical element undergoing adjustment of its electrical value, a tube connecting said nozzle to said device for delivering said stream to said nozzle, a traversing mechanism including an air motor powered by pressurized air for moving said nozzle along



said electrical element first in one direction during adjustment of electrical value and then in reverse direction to start position after adjustment of electrical value, and a first control for controlling the flow of pressurized air to said air motor for effecting movement of said nozzle in one direction and in reverse direction, that improvement comprising a second control for interrupting the flow of pressurized air to said air motor during movement of said nozzle in one direction.

3,845,587
RADIAL SURFACE FINISHING APPARATUS
Harold R. Klievoneit, 31 S. 40 Pl., Phoenix, Ariz. 85034
Filed Dec. 1, 1972, Ser. No. 311,233
Int. Cl. B24b *7/16, 5/00*
U.S. Cl. 51—118 **7 Claims**



1. Apparatus mounted upon a frame for grinding parallel surfaces on a workpiece, said apparatus comprising:

A. a first grinding wheel, said first grinding wheel being axially non-displaceable and configured to present a first non-deformable rigid planar surface perpendicular to its axis of rotation;

B. a second grinding wheel, said second grinding wheel being essentially parallel to and axially aligned with said first grinding wheel and configured to present a second

non-deformable rigid planar surface substantially perpendicular to its axis of rotation;

C. positioning means for axially displacing said second grinding wheel with respect to said first grinding wheel;

D. mounting means for rotatably supporting a workpiece intermediate said first and second grinding wheels, said mounting means comprising:

1. a shaft, said shaft being essentially adjacent the periphery of said first grinding wheel;

2. arm means for supporting said shafts in general alignment with the axis of rotation of said first and second grinding wheels, said shafts being radially removed from the periphery of said first and second grinding wheels; and

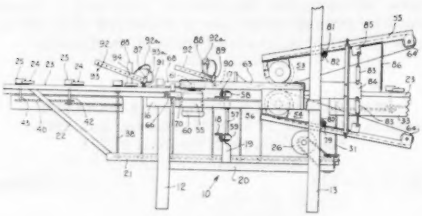
E. motive means for individually rotating each of said first and second grinding wheels; whereby, said first and second grinding wheels, rotating in a first direction, contact the respective sides of said workpiece and the friction between said first and second grinding wheels causes said workpiece to rotate in a second direction to produce a curved radial grind on said workpiece.

3,845,588

ARTICLE FINISHING MACHINE

Coy L. Huffman, Jr., 107 Brookside Way, Greenville, S.C. 29605

Filed Dec. 3, 1973, Ser. No. 421,346
Int. Cl. B24b *21*
U.S. Cl. 51—139 **5 Claims**



1. An apparatus for automatically finishing selected areas of an elongated picker stick while leaving a serrated portion of said stick unfinished, said picker stick having opposed sides joined by an upper and lower surface, said apparatus comprising:

a supporting frame;

conveyor means for moving said elongated picker stick in a straight path over said supporting frame;

a first elongated sanding machine carried by said frame on one side of said path for engaging and finishing one side of said picker stick as said picker stick is moved therepass by said conveyor means;

a second elongated sanding machine pivotally supported on said frame for being shifted into and out of engagement with the other side of said picker stick;

a source of pressurized air;

a double acting pneumatic cylinder carried by said frame having a piston rod extending out one end thereof coupled to said second sanding machine;

valve means coupled between said pressurized source of air and said cylinder capable of assuming a first state wherein air is coupled therethrough to said cylinder extending said piston and a second state wherein air is coupled therethrough to said cylinder retracting said piston;

a first switch means carried in the path of said picker picker stick for supplying a signal to said valve means upon engaging said picker stick being moved by said conveyor means;

a second switch means carried in said path of said picker stick and being spaced a predetermined distance from said first switch means for supplying a signal to said valve means upon engaging said picker stick being moved by said conveyor means; and

said valve means selectively supplying air to said cylinder for causing said second sanding machine to shift between a sanding position and a non-sanding position responsive to said signals from said first and second switch means;

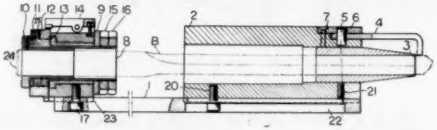
whereby said second sanding machine sands a portion of said other side of said picker stick adjacent the leading edge of said stick, omits said serrated portion and sands a portion adjacent said trailing edge.

3,845,589

GUN DRILL AND BORE GRINDING FIXTURE

George Mai, Jr., 1270 Fairview Blvd., Windsor, Ontario, Canada

Filed Nov. 12, 1973, Ser. No. 414,698
Int. Cl. B24b *3/24*
U.S. Cl. 51—219 R **1 Claim**



1. A fixture for use in conjunction with grinding machines for grinding gun drills, gun bores, reamers and other similar tools comprising in combination a rectangular bar, the front end of which is provided with a recessed elongated slot, and the rear end of which is provided with a recessed set screw hole; a front head, the external shape of which fits into the holder of the grinding machine, and the underside of which is provided with a line up groove for slidably adjusting for the length of the tool to be held therein and securing the said head to the slot in the said rectangular bar; an interchangeable drill bushing of various internal diameters which is inserted into the forward end of the front head and held therein by means of a set screw, for the purpose of holding the front end of the drill therein; a finger, swivably attached to the front head, located above the drill bushing and and extending slightly beyond it, for initially positioning the tool to the proper center line for grinding; a rear head which is attached to the rear end of said rectangular bar by means of a set screw passing through said recessed set screw hole, said rear head being able to contain the shank of the tool to be ground, to hold the tool fixed against forward or backward movement, and to allow cylindrical and indexed rotation of said tool; all by means of a bushing located within the body of said rear head; a sleeve which is fitted inside said bushing, which is free to rotate therein, and which is held within said bushing by a thrust washer and locking rings; an interchangeable cam which is indexed with grooves which is attached to the outside of said sleeve by a plurality of set screws; a spring loaded locating rocker mounted on top of the rear head body which engages the various indexing grooves of said cam; a tool shank adapter to fit individual tool shanks, attached to the end of said tool shank, and a main locking screw for clamping the tool and its adapter after insertion into said sleeve of the fixture.

3,845,590

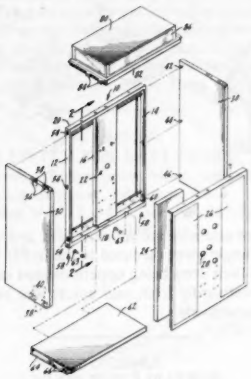
TELEPHONE BOOTHS

Edward S. Ertl, McHenry, Ill., assignor to Acoustics Development Corporation, Northbrook, Ill.

Filed July 16, 1973, Ser. No. 379,651
Int. Cl. E04h *1/14*
U.S. Cl. 52—36 **11 Claims**

1. A telephone booth assembly including a back, a pair of side panels and a shelf,

said back including spaced side frame members, a plurality of openings in each side frame member facing toward the side panels, each side panel having fastening members extending through said openings to attach the side panels to the back, one of said fastening members for each side panel including a plurality of threaded openings, and



locking means for each side panel extending through said back and into locking engagement with one of the fastening members for each side panel, said locking means having a threaded portion for engagement with one of the threaded openings in the fastening members,

and interlocking means for mounting said shelf to said side panels.

3,845,591

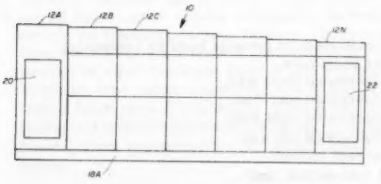
EXPANDABLE COVER SYSTEM

John L. Stine, Rt. 4, Box 300, Muskogee, Okla. 74401

Filed June 11, 1973, Ser. No. 368,885

Int. Cl. E04b *7/16*

U.S. Cl. 52—67 **7 Claims**



1. An expandable cargo cover comprising:

a. a base;

b. a plurality of inverted U-shaped frames mounted on said base, and skin means to cover said frames;

c. a first of said frames fixed to said base;

d. the remainder of said frames of successively smaller size so that they nest one within the other;

e. a plurality of horizontal rollers mounted on said base in two parallel lines extending in the same direction from the two legs of said first frame, the remainder of said frames having their legs resting on said rollers, thus permitting said frames to be traversed along the lines of rollers;

f. a plurality of parallel guide means, to laterally guide the legs of said frames as they are traversed along said lines of rollers;

g. at least two traversing means parallel to each of said lines of rollers to traverse the smallest frame along said lines of rollers, one said means connected to each leg of said smallest frame; and

h. stop means attached to each of said frames to limit the motion of the adjacent frames to move from a first position where they are substantially superimposed to a second position where they are end-to-end.

3,845,592

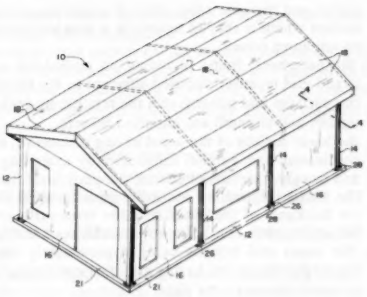
SYSTEM FOR MODULAR CONSTRUCTION

Jaime Patena, 417 S. Shasta, Stockton, Calif. 95205

Filed July 25, 1973, Ser. No. 382,372

Int. Cl. E04b *1/24*

U.S. Cl. 52—93 **15 Claims**

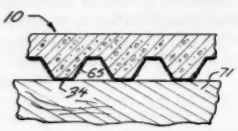


1. In a system for modular construction, a series of elongate outwardly facing bottom angle members forming an integral part of the foundation of a building structure, said angle members having upright portions coincident with a periphery of said foundation, upright post members attached to said bottom angle members along at least two opposite sides of said building structure, said post members being spaced outwardly and at a predetermined horizontal distance from the upright portions of said angle members, said post members having upstanding attachment means at their tops, a series of prefabricated truss members supported by pairs of said post members positioned on said opposite sides of the building structure and held in place by said attachment means, each of said truss members spanning the horizontal distance between a supporting pair of said post members, elongate outwardly facing top angle members interconnecting said post members at a spaced vertical distance above the bottom angle members on said two sides of the building structure, said top angle members having upright portions spaced inwardly at substantially said predetermined horizontal distance from said upright post members, a plurality of prefabricated wall panels positioned with respect to said upright post members so that top portions of said panels are held between said top angle members and said post members and bottom portions of said wall panels are held between said bottom angle members and said post members, and a plurality of prefabricated roof panels attached to and supported by said truss members, said upright post members, truss members, wall panels, and roof panels combining to form an essentially complete building structure.

3,845,593
LIGHTWEIGHT CONCRETE PANEL

Giovanni Zen, 1275 Chartwell, West Vancouver, British Columbia, Canada

Filed Sept. 12, 1972, Ser. No. 288,362
Int. Cl. E04b *1/86*
U.S. Cl. 52—144 **6 Claims**



1. In a building having a structural framework with spaced frame members, a lightweight concrete structural panel comprising:

a. a reinforced rectangular panel of lightweight low-density concrete having a smooth planar upper surface and a peripheral frame,

b. a continuous metal reinforcing grid embedded in the concrete,

c. the lower surfaces of the peripheral frame being coplanar and the side edges thereof presenting a concrete surface which is shaped to interfit a matching surface of an adjoining panel,

d. the peripheral frame including an embedded and enlarged grid member disposed adjacent to the frame exterior surfaces and integral with the reinforcing grid so that rigidity and strength are imparted thereto,

e. the lower surface of the panel having successive, narrow, continuous and parallel longitudinally extending crests and troughs extending between the peripheral frame,

f. the troughs extending inwardly approximately one-half the thickness of the panel, and the crest surfaces being flat and coplanar with the lower surfaces of the frame,

g. the crests and troughs being approximately the same lateral dimension and having a width approximately equal to the thickness of the panel,

h. a thin continuous coating of acoustical composition which is applied to the lower surface of the panel, including troughs, crests, and frame, to provide an integral resilient, mounting therefor between the panel and the frame members, and

i. the low density concrete composition of the panel including hydraulic cementitious material including lightweight aggregate and sufficient density reducing means for enabling nails to readily pass therethrough.

3,845,594
STEEL JOIST OR COMPOSITE STEEL AND CONCRETE CONSTRUCTION

Ernest O. Butts, and John S. Hall, both of Ottawa, Canada, assignors to Hambro Structural Systems Limited, Ottawa, Ontario, Canada

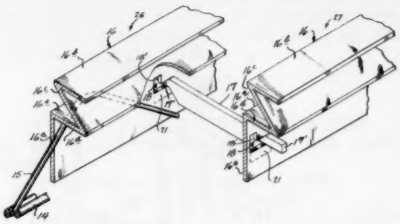
Continuation-in-part of Ser. No. 872,017, Oct. 29, 1969, abandoned, and a continuation-in-part of Ser. No. 145,758, May 21, 1971. This application Jan. 25, 1972, Ser. No. 220,627
Claims priority, application Canada, Nov. 4, 1968, 034293
Int. Cl. E04c *3/16, 3/293*
U.S. Cl. 52—98 **20 Claims**

1. In a steel joist having top and bottom steel chords vertically spaced by a joining web, the improvement in said top chord comprising:

a flat top element having two legs integrally extending downwardly from its opposite sides,

each said leg having a first portion extending downwardly and the inwardly to form a ledge and a second portion extending from said ledge downwardly and being turned outwardly and upwardly again to form a channel for receiving notched spanner bars,

wherein said upward turn of said channels is notched at spaced horizontal positions for aiding in the insertion and

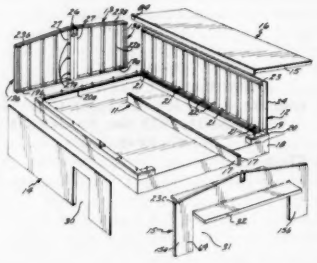


removal of said notched spanner bars, and wherein there are right angle pieces secured to the upper apices of said web with their arms being uppermost and extending horizontally outwardly from said apices and resting on said ledges respectively.

3,845,595
PORTABLE BUILDINGS

Victor Joseph Abrams, deceased, late of 356 Turquoise Dr., Perris, Calif. 92370 (by Eileen Marie Abrams, administratrix)

Filed Mar. 19, 1973, Ser. No. 342,645
Int. Cl. E04b *1/02, 7/02*
U.S. Cl. 52—93 **3 Claims**



1. A multi-element portable building comprising:

a ridge beam core;

a prefabricated front wall;

a prefabricated rear wall;

a prefabricated right wall;

a prefabricated left wall;

a right roof section;

a left roof section; and

fastening means for joining adjacent sections, whereby said elements of said building may be transported to, and assembled at, a desired location;

said right roof section and said left roof section each comprising a stringer capable of being assembled flush with a respectively associated side of said ridge beam; and

means for clamping said stringers and ridge beam core together;

said front wall and said end wall being notched at opposed points on their upper edges to receive said ridge beam core and said stringers;

at least one of said front wall and said end wall being divided

into separable sections each ending in an upright which abuts against the back of the other when said sections are assembled;

said fastening means comprising a bolt set one end of which is fixed to one of said sections and the other of which is fixed to the other of said sections;

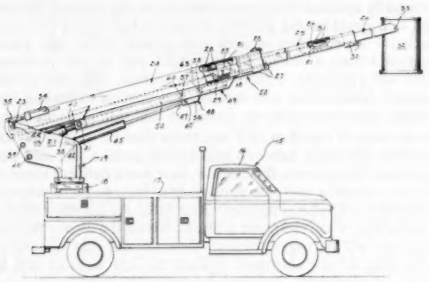
each of said sections comprising a tie beam secured to said section and extending in a direction toward said upright, said fastening means further comprising a metal strap of generally "V" shape having its apex extending toward said upright and its arms bolted to said tie beam, the head of said bolts being secured in the apex of the clamp of one of said sections and the nut of said bolt sets being disposed at the apex of the "V" shaped strap of the other of said sections.

3,845,596

DRIVE SYSTEM FOR A TELESCOPIC BOOM

David K. Veenstra, Bloomington, Minn., assignor to Highway Manufacturing Company, Edgerton, Wis.

Filed May 17, 1973, Ser. No. 361,130
Int. Cl. E04h *12/34*
U.S. Cl. 52—118 **7 Claims**



1. In an extensible boom having a plurality of boom sections including a base boom section which is rotatably connected to a turret for pivotal motion in a vertical plane about a pivot axis, and an elevation cylinder connected to said turret and said base boom section to control the elevation of said boom, the improvement comprising:

an extension cylinder having one end connected to said turret at a point which is laterally spaced a substantial ditance from said pivot axis;

a trolley slidably connected to said base boom section for motion along the lengthwise dimension thereof and connected to the other end of said extension cylinder;

a second boom section slidably mounted to the base boom section for telescopic motion between a retracted position in which the boom reach is minimal and an extended position in which the boom reach is at a maximum; and extension drive means connecting said trolley with said second boom section to alter the reach of said boom by sliding said second boom section with respect to said base boom section in response to the sliding motion of said trolley.

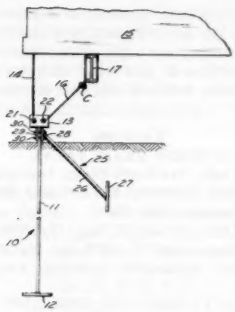
3,845,597

GROUND ANCHOR TIE-DOWN APPARATUS

Howard F. Foster, 4500 Cavendish Cir., Ft. Lauderdale, Fla 33309

Filed Aug. 20, 1973, Ser. No. 389,449
Int. Cl. E02d *5/80*
U.S. Cl. 52—166 **11 Claims**

1. In a tie-down apparatus for a mobile home or the like comprising a first ground anchor extending substantially vertically down into the ground, a first, flexible, above-ground tensioning element attached at its upper end to the mobile home and extending downward therefrom substantially vertically, a tensioning head connected to the upper end of said ground anchor and operatively coupled to said first flexible tensioning element to apply a selected tension thereon, and a second, flexible aboveground tensioning element operatively coupled to said head and extending diagonally upward therefrom inboard of the mobile home and attached at its upper



end to a support beam at the bottom of the mobile home, the improvement which comprises:

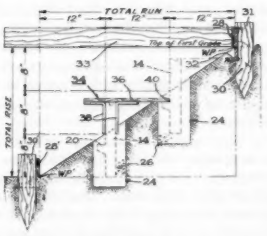
a second ground anchor having an elongated rigid rod operatively connected at its upper end to said tensioning head and extending diagonally downward therefrom inboard of the mobile home, and a transverse ground plate on said rod.

3,845,598

METHOD AND SYSTEM OF FORMING PRECAST GARDEN STEPS

John F. P. Tate, 2819 W. Hampton Ave. S.W., Roanoke, Va. 24015

Division of Ser. No. 382,657, July 26, 1973, Pat. No. 3,813,831. This application Feb. 15, 1974, Ser. No. 443,029
Int. Cl. E04f *11/00*
U.S. Cl. 52—173 **9 Claims**



1. A method of installing a stair on inclined terrain from a plurality of precast tread and riser elements of which the riser element is of an overall height between top and bottom edges approximately twice the height of the assembled step rise, and is provided with integrally formed tread-supporting means projecting transversally from said riser; said method including the steps of

a. establishing working points at a proposed top and bottom of said stair; and determining the number of tread and riser elements required, and the run distances and disposition between successive riser elements

b. excavating the terrain at the respective positions of riser disposition on the inclined terrain, so as to form narrow trenches in which to embed the substantial lower body portions of the respective riser elements

c. placing the riser elements with the lower body portion in said excavations and refilling around the lower body portions of said riser elements so as to stably embed and properly position the risers in predetermined succession; and

d. assembling said tread elements in relation to said riser elements, so that forward portions of said tread elements rest respectively on top edges of said riser elements, and rearward portions of said tread elements rest on said tread-supporting means of said riser elements.

3,845,599
WINDOW DRAIN VALVE

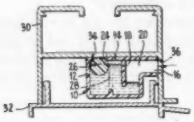
Clarence Harold Jolly, New South Wales, Australia, assignor to Comalco Limited (formerly K/a Comalco Industries Pty. Limited), Melbourne, Australia

Continuation of Ser. No. 64,671, Aug. 18, 1970, abandoned. This application July 17, 1972, Ser. No. 272,336

Claims priority, application Australia, Aug. 18, 1969, 59641/69

Int. Cl. E04f *17/00*; E06b *7/14*

U.S. Cl. 52—209 **4 Claims**



1. A window drain valve in combination with a horizontal window sill having a water drain aperture in its lower surface and an aperture in its external face, said window drain valve having a body section disposed below said sill and also having a cover with an inlet slot formed therein being in communication with a liquid-containing inflow compartment formed in said body section, said inlet slot also being aligned with said drain aperture, said window drain valve having an overflow outlet aperture in communication with a liquid-containing outflow compartment formed in said body section, said overflow outlet facing horizontally and disposed at a level below said drain aperture while being aligned with said aperture in the external face,

wherein a downwardly projecting web from said cover divides said body section into said inflow and outflow compartments, said compartments being in liquid communication with each other, said compartments having upright walls extending from a bottom wall to said cover, wherein a float valve member is provided in said inflow compartment and is arranged so that an increase in external air pressure against said outlet reduces the level of liquid in said outflow compartment and correspondingly raises the level of liquid in said inflow compartment to move said float valve member toward a position in which it closes said inlet,

said downwardly extending web being of sufficient length to ensure that said float valve member will reach its closed position before the liquid in said outflow compartment has dropped to the lower extremity of said web, and said overflow outlet being at a level such that liquid entering through the inlet passes under the web and out the inlet without raising the float valve member to a closed position.

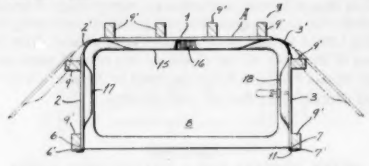
3,845,600
BIASED WALL PANEL FOR USE WITH A THREE-SIDED ALCOVE

John W. Moore, St. Louis County, Mo., assignor to Swan Corporation, St. Louis, Mo.

Filed June 6, 1973, Ser. No. 367,457

Int. Cl. E04c *2/20*

U.S. Cl. 52—222 **1 Claim**



1. For use with a three-sided alcove having a back wall and adjoining side walls, the planes of the latter being perpendicular to the plane of the back wall, a finishing wall panel for disposition within said alcove comprising a unitary panel integrally molded of durable material having limited flexibility, said panel having a forward or outer face and a rearward face for presentation against said alcove walls, said panel further having a central portion and a pair of side portions, said side portions being normally biased into non-planar aligned relationship with said central portion extending forwardly therefrom with the planes of said side portions being at an angle of less than 180° and more than 90° to said central portion, the zones between said central portion and said side portions being forwardly concave, said zones defining zones of flexure whereby said side portions may be urged into substantially mutually planar parallel relationship against their normal bias so that when the panel is placed within the alcove the side portions will be urged through their normal bias rearwardly into snug surface abutment against the side walls of said alcove for stabilizing and maintaining said panel in covering relationship therein with said central portion presented against said alcove back wall.

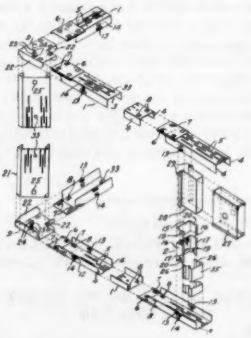
3,845,601
METAL WALL FRAMING SYSTEM

James F. Kostecky, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 17, 1973, Ser. No. 407,376

Int. Cl. E04c *2/38*

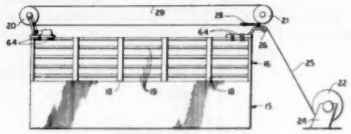
U.S. Cl. 52—290 **6 Claims**



1. A metal wall framing system for buildings or the like comprising a substantially channel shaped track member

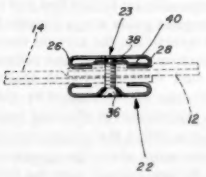
having a web portion and a pair of opposed flanges, a substantially channel-shaped stud member having a web portion and a pair of opposed side walls which are adapted to fit between said flanges of said track member, each of said flanges of said track member having an inwardly projecting lug and an inwardly and upwardly projecting tab, each of said sidewalls of said stud member having a slot and a notch formed therein adjacent to one end of said stud and designed to cooperate with said lugs and said tabs whereby as the end of said stud member is inserted between said flanges of said track member, said projecting lugs will engage said slots and said tabs will engage said notches and thereby lock the end of said stud member to said track member.

3,845,602
METHOD FOR APPLYING BANDS TO A ROOF
Robert Joe Alderman, Rt. 4, Lawrenceville, Ga.
Filed June 29, 1973, Ser. No. 375,043
Int. Cl. E04b *1/00*; **E04g** *21/00*
U.S. Cl. 52—741 **4 Claims**



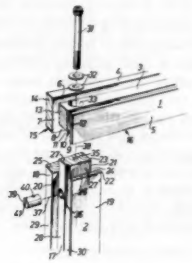
1. In a method of installing roof bands in a roof structure, the steps of connecting the leading end of band material from a supply to a carrier on one side of the roof, moving the leading end of the band material with the carrier to the other side of the roof thereby extending a length of band material from the supply across the roof, creating a second connection of the band material to the carrier at the one side of the roof, disconnecting the leading end of the band material from the carrier, severing the band material ahead of its second connection to the carrier and fixing the ends of the severed length to the roof structure.

3,845,603
BATTEN ASSEMBLY TO HOLD ENCLOSURE SHEETS
Alan Eckel, 155 Fawcett St., Westford, Mass. 02138
Filed Mar. 30, 1972, Ser. No. 239,500
Int. Cl. F16b *5/02*
U.S. Cl. 52—753 J **2 Claims**



1. In a battened joint between a pair of curtains, in combination, a first curtain and a second curtain positioned in side-by-side relationship, each curtain comprising a sheet of resilient material and a sheet of non-resilient material facially united to each other, each curtain having an edge, a proximate side and a distal side, the edges of the curtains being substantially parallel to each other, the resilient sheet of each curtain being on its distal side, the adjacent edges of the curtains being overlapped with their overlapped portions being in facial contacting relation; a first batten and a second batten, each batten having a main body and two looped portions extending inwardly from said main body at opposite sides thereof, said looped portions contacting the respective outer faces of said curtains, said first batten extending along and in continuous contact with only the distal side of the overlapped portion of said first curtain and said second batten extending along and in continuous contact with only the proximate side of the overlapped portion of said second curtain and fastening means holding said battens and said overlapped portions of said curtains firmly together, whereby said resilient material is compressed against said non-resilient material and open spaces between said overlapped portions of said curtains are eliminated.

3,845,604
CORNER JOINT FOR FRAME STRUCTURES
Par Axel Rune Ottosson, 38200, Linneavagen 6, Sweden
Filed Oct. 18, 1971, Ser. No. 190,166
Claims priority, application Sweden, Oct. 22, 1970, 14278/70
Int. Cl. F16b *7/18*
U.S. Cl. 52—758 H **7 Claims**

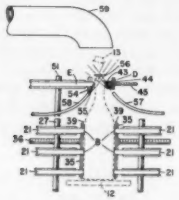


1. A window or door construction comprising a rectangular frame defined by frame members of identical cross sectional shape, each of said frame members comprising a central bar portion sandwiched between two side bar portions, said side bar portions extending inwardly of said frame beyond said central bar portion so as to form a longitudinally extending inwardly opening channel defined by the inner surface of said central bar portion and the opposed inner surfaces of said side bar portions, at least two said frame members being joined at right angles to one another at the corner of said frame, a first one of said joining members having end portions of said side bar portions recessed from the end of said central bar portion a distance equal to the depth of said channel, the end portion of said central bar portion of said first member thereby projecting beyond the ends of said recessed side bar portions as a tongue which is received with a close fit in said channel of the second of said two joining members, end surfaces of said central bar portion and side bar portions of said second member being flush with outer surfaces of the respective bar portions of said first member and end surfaces of said side bar portions of said first member abutting inner edges of respective side bar portions of said second member, said tongue portion of said first member having a longitudinally extending hole therein and an end portion of said central bar portion of said second portion having a transverse hole aligned therewith, a panel having marginal edge portions received in said channels of said frame members, and fastening means in said aligned holes releasably securing said frame members together at the corners of said frame and thereby removably holding said panel in said frame.

3,845,605
REMOVING BOTTLE CAPS

Thomas P. Hartness, 305 Bridgewater Dr., Greenville, S.C.

Filed Nov. 3, 1972, Ser. No. 303,650
Int. Cl. B65b 43/40
U.S. Cl. 53—3 5 Claims

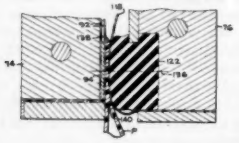


1. An apparatus for removing a threaded cap having a top and side wall from a bottle comprising: conveyor means for supporting and moving said bottle in a forward direction; a pair of laterally spaced elongated gripping surfaces engaging opposite sides of said bottle restraining said bottle against rotation as said bottle is moved forward on said conveyor; means for moving said gripping surfaces in a forward direction at substantially the same rate of speed; an elongated stationary member carried above said gripping surfaces positioned for engaging a side wall of a cap on said bottle as said bottle is moved forward on said conveyor; an elongated belt carried on the opposite side of said bottle from said stationary member engaging the other side of said side wall of said cap; means for moving said elongated belt in a forward direction at a higher rate of speed than said gripping surfaces are being moved for rotating said cap relative to said bottle; whereby said cap is rotated off said bottle as said bottle is restrained from rotating by said pair of elongated gripping surfaces.

3,845,606
PACKAGE SEALING IN STEAM ATMOSPHERE

Donald C. Wilson, 6879 Dartmoor Way, San Jose, Calif. 95129

Division of Ser. No. 304,707, Nov. 8, 1972. This application Feb. 27, 1974, Ser. No. 446,251
Int. Cl. B65b 51/30, 7/06
U.S. Cl. 53—21 FC 7 Claims

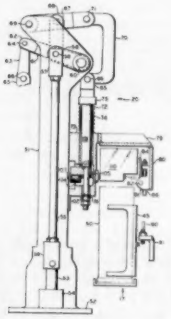


1. A process of heat sealing flexible container pouches within a steam atmosphere, each pouch having confronting sealing surfaces of which at least one is formed by a thermoplastic material; said process comprising the steps of surrounding said sealing surfaces with a steam atmosphere; bringing the sealing surfaces together along a common contact line; pressing the sealing surfaces together in intimate contact under a gripping pressure beginning at the contact line and moving progressively outward in a lateral direction therefrom to expel foreign matter from between the sealing surfaces; simultaneously preheating the sealing surfaces as they are pressed together to a temperature higher than the temperature of the steam atmosphere and lower than the sealing temperature of the thermoplastic material; maintaining said temperature until liquid droplets between the sealing surfaces are varporized and the temperature differential between the temperature of the thermoplastic material and the sealing temperature thereof is substantially reduced; momentarily heating the sealing surfaces to the sealing temperature of the thermoplastic material while maintaining the gripping pressure on the sealing surfaces; reducing the temperature of the sealing surfaces to a temperature lower than the sealing temperature while maintaining the gripping pressure thereon; and releasing the gripping pressure on the sealing surfaces.

3,845,607
SCORE BREAKING MECHANISM FOR GABLE TOP CARTON

Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 7, 1973, Ser. No. 395,026
Int. Cl. B65b 7/18
U.S. Cl. 53—378 8 Claims



1. Apparatus for breaking score lines in the upper portion of an open top tubular carton having first and second opposing roof panels joined by first and second opposing gable panels to form a gable top structure, each of said gable panels comprising a central triangular panel joined to one of said roof panels by a first triangular fold back panel and to the other of said roof panels by a second triangular fold back panel, comprising a carriage; means for effecting reciprocal movement of said carriage between a retracted position and a carton engaging position located over a score breaking station; support means for guiding said carriage during the reciprocal motion of said carriage; first, second, third and fourth shafts mounted in said carriage, with said first and second shafts being parallel to each other, and said third and fourth shafts being parallel to each other and perpendicular to said first and second shafts; first and second triangular gable wings mounted on said first and second shafts, respectively, for arcuate movement about the axis of the respective shaft; first and second roof panel wings mounted on said third and fourth shafts for arcuate movement about the axis of the respective shaft; actuating means responsive to said means for effecting reciprocal movement of said carriage to effect the arcuate movement of said first and second gable wings about the respective axis of the first and second shafts into contact with the first and second opposing gable panels, respectively, of a carton in said score breaking station to fold said first and second opposing gable panels inwardly toward each other during the movement of said carriage from said retracted position toward said carton engaging position, to subsequently effect the arcuate movement of said first and second roof panel wings about the respective axis of said third and fourth shafts into contact with the first and second opposing roof panels of said carton in said score breaking station to fold said first and second opposing

roof panels inwardly toward each other over the enfolded first and second opposing gable panels, to thereby break score lines forming the first and second opposing roof panels and the first and second opposing gable panels, to thereafter effect the arcuate movement of said first and second roof panel wings about the respective axis of said third and fourth shafts away from said first and second opposing roof panels of said carton in said score breaking station, and then during the movement of said carriage from said carton engaging position toward said retracted position to effect the arcuate movement of said first and second gable wings about the respective axis of said first and second shafts away from said first and second opposing gable panels of said carton in said score breaking station to clear said carton.

3,845,608

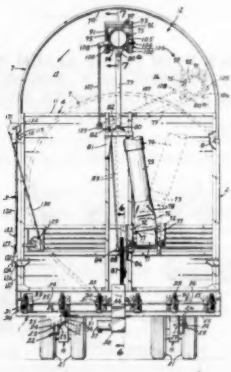
CONTINUOUS LOOSE HAY STACKING MACHINE

Deldon Lueshen, Wisner, Nebr., assignor to Farmhand, Inc., Hopkins, Minn.

Continuation-in-part of Ser. No. 243,222, April 12, 1972, abandoned. This application Apr. 25, 1973, Ser. No. 354,254

Int. Cl. A01d *87/10*

U.S. Cl. 56—13.3 **18 Claims**



1. A stack forming machine comprising:

a. mobile wall structure forming a container including top and bottom walls, generally vertical side walls disposed in spaced apart generally parallel relationship longitudinally of the direction of travel of the machine, and front and rear walls;

b. said wall structure defining an opening through said front wall adjacent the top wall;

c. means for loading the container with crop material and including an impeller mechanism and conduit means extending from the impeller mechanism to said opening;

d. said conduit means including a movable delivery section disposed to direct material through said opening toward said rear wall on an axis extending parallel to said side walls;

e. and support means mounting said delivery section for movements generally transversely of the container and for holding said delivery section in a substantially constant attitude relative to the container in all positions of transverse movement of said delivery section, whereby said material is discharged into the container in directions parallel to the planes of said side walls.

3,845,609

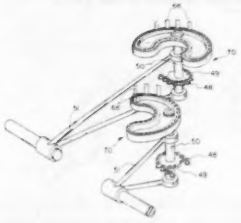
TOBACCO PRIMER

Andrew Whitley, Rt. 2, Box 72, Zebulon, N.C.

Filed Oct. 6, 1972, Ser. No. 295,711

Int. Cl. A01d *45/16*

U.S. Cl. 56—27.5 **6 Claims**



1. A leaf removing and cutter head assembly for removing leaves from the stalk of tobacco type plants comprising: a housing plate means; a plurality of wall means forming a channel extending endlessly about the periphery of said plate means; an endless cutter support means carried within said channel; at least one cutter means attached to said support means; and means to drive said support means in an endless path whereby leaves coming into contact with said cutter means will be severed from said stalk.

3,845,610

BLADE CONSTRUCTION FOR FRUIT HARVESTING MACHINE

James G. Sharp, and David E. Sharp, both of Rt. 104, North Rose, N.Y. 14516

Continuation-in-part of Ser. No. 235,524, March 17, 1972, Pat. No. 3,777,462. This application Sept. 10, 1973, Ser. No. 395,652

Int. Cl. A01d *51/00*

U.S. Cl. 56—328 R **7 Claims**

1. A blade construction for a fruit harvesting machine comprising a flexible blade having a base section for attachment to a rotary portion of the harvester, and tip portion at the end remote from said base portion for movement into lifting contact with fruit lying on the ground, said blade having a width several times its thickness and a length several times its width, said base section comprising a relatively small portion of the overall length of said blade, and at least one elongated depression in one surface of said blade extending substantially the entire length thereof from said base section to said tip parallel to the longitudinal axis of said blade.

3,845,611

METHOD AND APPARATUS FOR PRODUCING COMPOSITE YARN

Necdet Senturk, Norwood, and Frank A. Aschenbrenner, Framingham, both of Mass., assignors to Electrospin Corporation, Columbus, Ohio

Filed May 3, 1972, Ser. No. 250,024

Int. Cl. D01h *1/12*

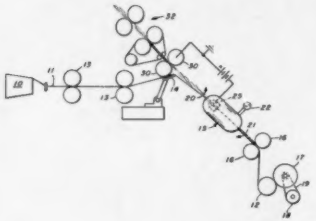
U.S. Cl. 57—5 **8 Claims**

1. A process for producing a composite yarn having an inner continuous core yarn and an outer layer of staple fibers

wrapped tightly and uniformly along the length of the core, said process comprising:

a. continuously feeding core yarn from a source of supply to a point of collection,

b. twisting the yarn at a site located between the source of supply and the point of collection so that twists of opposite directions are created in the yarn,



c. subjecting at least a portion of the length of core yarn located between the source and the site of twisting to an electrostatic field created between opposite electrodes, and

d. feeding staple fibers into the electrostatic field with the field conveying the fibers into contact with the core between said source and said twisting site for twisting thereabout.

3,845,612
SPINNING APPARATUS

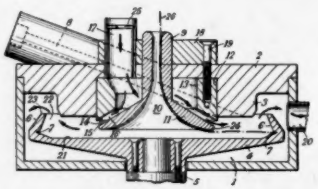
Andrew Alexander Chisholm, Clitheroe, and Christopher John Copple, Blackburn, both of England, assignors to Platt International Limited, Helmshore, Rossendale, England

Filed Feb. 23, 1973, Ser. No. 335,097

Claims priority, application Great Britain, Feb. 23, 1972, 8384/72

Int. Cl. D01h *11/00*

U.S. Cl. 57—56 **9 Claims**



1. Apparatus for the open end spinning of textile yarns comprising,

a spinning rotor which is open at one end,

a fibre collecting surface within the spinning rotor,

a cover member adjacent said open end of the spinning rotor,

a fibre feed duct for conveying fibres to said fibre collecting surface,

a yarn delivery duct through which spun yarn is removed from the spinning rotor, and

an air passage extending through the cover for continuously withdrawing air from the interior of the spinning rotor during the spinning operation, whereby air passes through the interior of the spinning rotor to remove debris therefrom.

3,845,613
FALSE-TWIST DEVICE

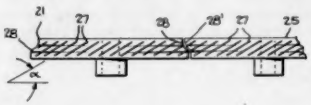
Gustav Knebel, Dubendorf, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

Filed Apr. 4, 1973, Ser. No. 347,673

Claims priority, application Switzerland, Apr. 11, 1972, 5395/72

Int. Cl. D01h *7/92*; D02g *1/08*

U.S. Cl. 57—77.4 **9 Claims**



1. False-twist device for textile yarn with circular discs arranged on parallel rotatable shafts, characterized in that four such shafts (6,7,8,9) are provided the axes of which are at the corners of an imaginary square, and in that on the shafts (6,8; 7,9) situated diagonally opposite each other, the discs (19,20,23,24; 21,22,25,26) are arranged on the same level, the disc rims being provided with configurations (27) extending at an ascending angle α with respect to the disc surfaces and with profiles (40,40'; 41,41'; 42,42') and that the disc rim profiles of discs arranged on the same level are complimentary.

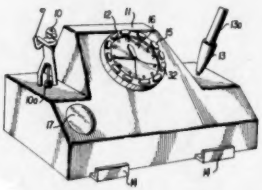
3,845,614
DESK CLOCK WITH VISUAL ALARM INDICATOR

Leon L. Christ, 14038 95th Ave. N., Seminole, Fla. 33542

Filed Aug. 20, 1973, Ser. No. 389,583

Int. Cl. G04c *21/16*

U.S. Cl. 58—19 A **9 Claims**



1. A desk clock with a visual alarm indicator comprising:

a casing including a clock face and a visual alarm means;

a clock mechanism mounted in said casing having an hour-hand shaft;

a conductive metal pointer mounted on said shaft to rotate therewith;

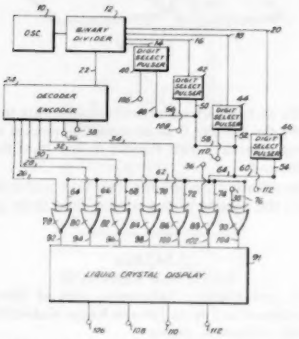
a plurality of manually rotatable switches spaced around the periphery of said clock face corresponding to the displayed increments of time, each of said switches including a manually engageable portion exposed exteriorly of said casing, a shaft passing through said casing, and a terminal contact portion extending laterally from said shaft whereby each of said switches may be rotated about said shaft from an open position out of the path of movement of said pointer to a preset position wherein said contact portion lies in said path; and

means electrically interconnecting said pointer, said visual alarm means, a power source, and said switches such that when said pointer is driven by said clock mechanism into engagement with the contact portion of a preset switch, the visual alarm means will be activated.

3,845,615
MULTIPLEXED LIQUID CRYSTAL DISPLAY

Arthur F. Cake, Smithtown, N.Y., assignor to Uranus Electronics Inc., New Rochelle, N.Y.

Filed July 5, 1973, Ser. No. 376,413
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R **9 Claims**



1. An electronic timepiece comprising:

a solid state display for displaying time which includes a plurality of liquid crystal means having segment means to generate an electrical field within the display for changing molecular, positional and orientational order of the liquid crystal whereby hours and minutes may be made to appear;

an electrically operated circuit for providing an alternating current field for said liquid crystal means, said circuit having one part including a plurality of interconnected pulsers to sequentially produce signals representative of hours and minutes information for respective segment means of said liquid crystal means with one lead form each said pulsers being connected to said liquid crystal means, said circuit being completed by decoder-encoder means driving exclusive OR gates whose other inputs are connected to a common output lead of said pulsers, said exclusive OR gates being connected by leads to said segment means; and

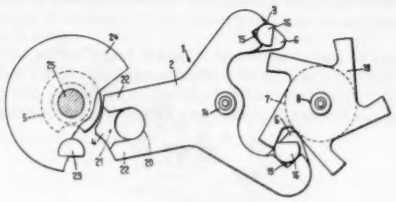
a frequency source for said electrically operated circuit to provide constant frequency signals thereto.

3,845,616
LEVER ESCAPEMENT FOR A TIMEPIECE MOVEMENT

Pierre Jeanmairet, Nidau, and Andre Paroz, Brugg, both of Switzerland, assignors to Marc Favre & Cie S.A., Canton of Berne, Switzerland

Filed Oct. 4, 1973, Ser. No. 403,658
Claims priority, application Switzerland, Oct. 12, 1972, 14916/72
Int. Cl. G04b *15/08*; B23p *13/00*
U.S. Cl. 58—121 R **7 Claims**

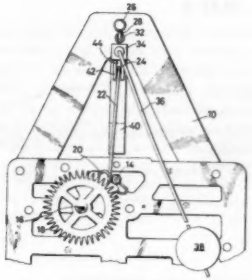
1. A lever escapement for a time piece movement, comprising a lever mounted for oscillating motion and including a first and a second portion assembled together after forming thereof, said first portion having pallet guides and spaced horns defining a lever notch therebetween, said second portion including integrally a dart and banking members, and pallets on said banking members and engaged with said guides.



3,845,617
PENDULUM CLOCK

Karl Holzmann, Furtwangen, Germany, assignor to Badische Uhrenfabrik GmbH, Furtwangen, Germany

Filed Dec. 7, 1973, Ser. No. 422,924
Claims priority, application Germany, Feb. 13, 1973, 7305345
Int. Cl. G04b *17/02*; G04c *3/02*
U.S. Cl. 58—129 **5 Claims**



1. In a pendulum clock having a weighted oscillating pendulum supported on a stationary frame; an escapement shaft; and a lever connected to said escapement shaft, said lever having a segment engaged in a slot in a portion of the pendulum extending in parallel with said escapement shaft so as to form a connection with said pendulum, the improvement comprising; said lever being a pendulum-type wire, said wire having a bent end portion remote from said escapement shaft and extending parallel therewith, said end portion being engaged in the pendulum slot; ear means being formed on the upper surface of said pendulum base; and support means on the upper end of said frame, said support means being engaged by said ears for pivotable suspension thereon of said pendulum.

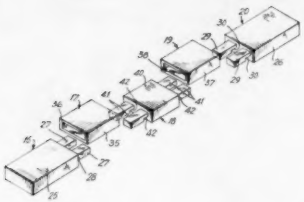
3,845,618
BRACELET CONSTRUCTION

Stanley Meyerson, 1111 Ocean Ave., New York, N.Y. 11230

Filed Sept. 24, 1973, Ser. No. 400,212
Int. Cl. F16g *15/12*
U.S. Cl. 59—80 **9 Claims**

1. In a bracelet construction, the combination comprising a plurality of longitudinally extending rows of elements, the

rows being in side-by-side relation with each other, a pair of laterally inward projections on each element of each outer row, the elements of each row adjacent to an outer row having openings in their outer sides for receiving said projections,



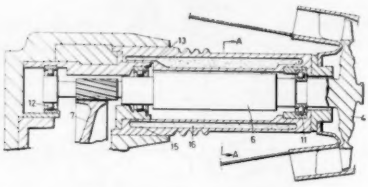
said adjacent row elements each being located to receive projections of a pair of outer row elements, and retaining means retaining said projections in said openings, whereby said element are all interconnected.

3,845,619

COMPOSITE HEAT-CONDUCTING MEANS

John Sidney O'Neill, Alcester, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, England

Filed July 18, 1973, Ser. No. 380,336
Claims priority, application Great Britain, July 25, 1972, 34624/72
Int. Cl. F02c 7/10
U.S. Cl. 60—39.51 H **3 Claims**



1. A gas turbine engine comprising:
a. a turbine;
b. a shaft on which the turbine is mounted,
c. bearing means supporting the shaft along its length; and
d. a hollow housing around the shaft which supports the bearing means and contains a compacted copper powder substantially 20% of said powder having a 300 mesh particle size, while the remainder has a particle size of substantially 100–150 mesh in order to render said powder more highly thermally conductive.

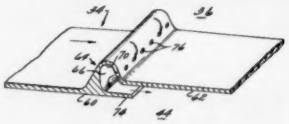
3,845,620

COOLING FILM PROMOTER FOR COMBUSTION CHAMBERS

Milton J. Kenworthy, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 12, 1973, Ser. No. 331,519
Int. Cl. F02c 7/18
U.S. Cl. 60—39.65 **11 Claims**

1. A cooling film promoter for passing, from a plenum containing cooling fluid flowing in a predetermined direction, a portion of the cooling fluid in a protective film upon a liner partially defining a hot gas passage, the promoter comprising:
a first liner segment partially defining the plenum;
a second liner segment partially defining the hot gas passage, the first and second liner segments cooperating to form a pocket, said second liner segment having a downstream end portion spaced from said first liner segment to form an exit from said pocket for directing cooling air along said first liner segment,
aperture means in said first liner segment for providing communication between the pocket and the plenum, wherein said aperture is open to the direction generally



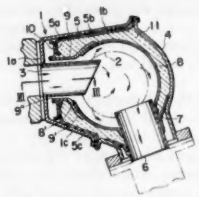
opposite said predetermined direction within the plenum, whereby the cooling fluid entering the pocket is partially directed upstream with respect to the fluid flow in the plenum; and
means for diffusing the cooling fluid flow within the pocket prior to the passing of the cooling fluid from said exit.

3,845,621

MANIFOLD REACTOR

Kenji Goto, and Michiya Nakamura, both of Shizuoka-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed July 23, 1973, Ser. No. 381,422
Claims priority, application Japan, Aug. 22, 1972, 47-83322
Int. Cl. F01n 3/10
U.S. Cl. 60—282 **7 Claims**



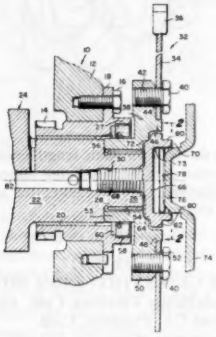
1. A manifold reactor comprising an inlet pipe arranged to be connected to an engine exhaust port, an outlet pipe arranged to be connected to an exhaust pipe, a first half shell segment secured to and laterally enclosing said inlet pipe, a second half shell segment joined to said first half shell segment and said shell segments forming an outer closure for the manifold reactor, an outer wall secured within the joint between said first and second half shell segments and extending therefrom inwardly within said first half shell segment, a tubular inner wall located within said first and second half shell segments so that a core of gases received from an engine through said inlet pipe is formed within said inner wall, said inner wall spaced inwardly from said outer wall and said second half shell segment, a heat-insulating material filled into the space between said inner wall and said outer wall and said second half shell segment, said inner wall having an opening extending about and spaced outwardly from said inlet pipe, a connecting pipe section secured to said inner wall about the opening therein with said connecting pipe extending around and spaced outwardly from said inlet pipe, said connecting pipe section spaced inwardly from said outer wall, an annular plate secured to the end of said connecting pipe section spaced from its connection to said inner wall and extending outwardly therefrom into sliding contact with the opposite end of said outer wall from the end connected to the joint between said half shell segments.

3,845,622

FASTENING MEANS ESTABLISHING CONCENTRICITY BETWEEN A VEHICLE FLYWHEEL, A FLUID CONVERTER AND AN ENGINE CRANKSHAFT

Gibson O. Hufstader, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1973, Ser. No. 419,902
Int. Cl. F16d *33/00*
U.S. Cl. 60—330 **3 Claims**



1. Fastening means establishing concentricity between a vehicle flywheel, a fluid converter and engine crankshaft comprising in combination: a crankshaft, an end of the crankshaft having a tapped hole therein; a splined surface on the exterior of said crankshaft adjacent said end; a flywheel having a centrally located aperture therein defined by an axially extending sleeve; said sleeve having an internal splined surface mating with and receiving the splined surface on said crankshaft providing a driving connection therebetween; an annular outwardly facing tapered retaining and piloting surface on said flywheel; a pilot and retaining bolt; a threaded shank on said bolt for engagement with the tapped hole in said crankshaft end, an enlarged head on said bolt, an annular tapered retaining and piloting surface on said bolt for engagement with said tapered surface on said flywheel, said tapered surfaces frictionally engaging and locking said bolt to said flywheel when said bolt is tightened thereagainst, said bolt head having a relatively large cavity in said enlarged head facing a direction axially opposite to that of said threaded shank; a fluid converter, centering means secured to and projecting outwardly from said fluid converter, said centering means having a size slightly less than that of the cavity in said enlarged bolt head, and a plurality of flat wrench surfaces on said bolt head whereby tightening of said bolt shank in the tapped hole in said crankshaft end draws mating tapered retaining and piloting surfaces into engagement frictionally locking and securing said flywheel to said crankshaft while simultaneously piloting the flywheel relative thereto and receipt of said fluid converter centering means within the cavity in said enlarged bolt head piloting said fluid converter relative to said crankshaft thereby establishing concentricity between the engaged crankshaft, flywheel and fluid converter.

3,845,623

DRIVE TRANSMISSION

Warren H. DeLancey, 1580 Prospect Ave., Apt. H4, Elyria, Ohio 44035

Filed Apr. 6, 1973, Ser. No. 348,756
Int. Cl. F15b *11/16*
U.S. Cl. 60—425 **35 Claims**

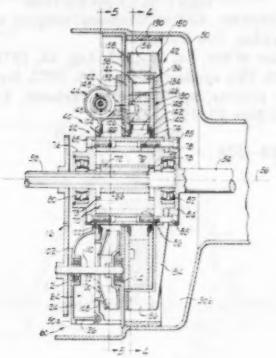
1. A drive transmission comprising:

a. rotatable input shaft means;

b. rotatable output shaft means;

c. positive displacement pump means connected between said input and output shaft means, said pump means defining a fluid inlet and fluid discharge and effective to pump fluid from said inlet through said discharge in response to relative rotation between said input and output shaft means;

d. fluid motor means drivingly connected to said output shaft means and communicable with said fluid discharge of said pump means, said fluid motor means driven by fluid discharged from said pump means to transmit torque



to said output shaft means in response to relative rotation between said input and output shaft means; and,

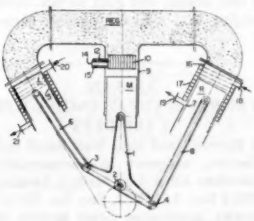
e. control valve means communicating with said discharge of said pump means for governing the flow of fluid through said pump discharge to said motor means, said valve means comprising a valving means positionable as a function of speed of rotation of said input shaft means and as a function of torque applied to said pump means so that said valve means governs the flow of pump discharge fluid to said motor means in relation to input shaft means speed and torque applied to said input shaft means.

3,845,624

STERLING PROCESS ENGINES

Willem Cornelis Roos, 318 Rena Dr., Bellerose, N.Y. 70501

Filed May 21, 1970, Ser. No. 37,749
Int. Cl. F02g *1/04*
U.S. Cl. 60—517 **1 Claim**



1. A hot-gas reciprocating engine having a closed thermodynamic cycle, comprising a first cylinder enclosing a hot space, said hot space receiving heat from a first source of external heat, a second cylinder enclosing a cold space, means connecting said hot and cold spaces, a regenerator interposed in

said connecting means, a third cylinder with a displacer piston therein, a second source of external heat supplying heat to the space above said displacer piston, means connecting said space above the displacer piston to the regenerator whereby heat from the second external source of heat is intermittently supplied to the regenerator, said aforementioned three pistons having their center lines converging to a substantially single point wherein said three pistons are operatively connected to a common connecting arm means.

3,845,625

HEAT ACCUMULATOR

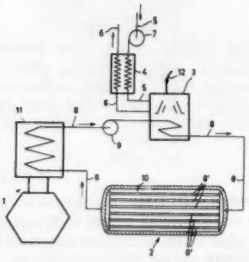
Johann Schroder, Aachen, Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Division of Ser. No. 174,357, Aug. 24, 1971, Pat. No. 3,709,209. This application Sept. 28, 1972, Ser. No. 293,120

Claims priority, application Netherlands, Aug. 29, 1970, 7012830; June 23, 1971, 7108625

Int. Cl. F02g *1/00*

U.S. Cl. 60—524 **8 Claims**



1. In combination a heat accumulator comprising a reservoir which contains an inorganic material having a melting point of less than 850° and wherein the inorganic material consists mainly of a eutectic mixture of lithium fluoride and at least one fluoride selected from the group consisting of sodium fluoride, potassium fluoride, calcium fluoride and magnesium fluoride, potassium fluoride or calcium fluoride being present only in the presence of both sodium fluoride and lithium fluoride or both magnesium fluoride and lithium fluoride, the maximum quantity of potassium fluoride being less than 30 mol percent and the maximum quantity of calcium fluoride being less than 40 mol percent, a hot gas engine having a heater which receives thermal energy from said material, a burner in which is burned fuel in combustion gas to produce thermal energy, duct means for flowing said material (a) through said burner for receiving thermal energy therefrom, (b) to and through said heat accumulator, (c) to and through said heater, and back to said burner, and pump means for urging said material to flow through said duct means.

3,845,626

HOT GAS STIRLING CYCLE ENGINE WITH IN-LINE CYLINDERS

John Osvald Berntell, and Sven Rolf Bertil Hellmen, both of Malmo, Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

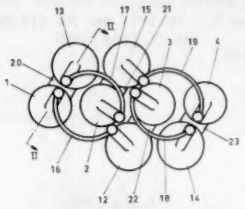
Filed Dec. 15, 1972, Ser. No. 315,475

Claims priority, application Great Britain, Dec. 18, 1971, 58907/71

Int. Cl. F02g *1/04*

U.S. Cl. 60—525 **4 Claims**

1. A Stirling cycle engine comprising in combination an even number of cylinders all of which are disposed in-line, a regenerator-cooler unit for each cylinder, and heater pipe systems connected from each cylinder to a corresponding regenerator unit arranged with heater pipes disposed in an arc with the pipes from two adjacent cylinders disposed in a cylindrical arrangement comprising a combustion chamber, cold



gas connecting ducts of the same length connected from each regenerator-cooler unit thereby being disposed to lead from said in-line cylinders to said regenerator units disposed on opposite sides thereof.

3,845,627

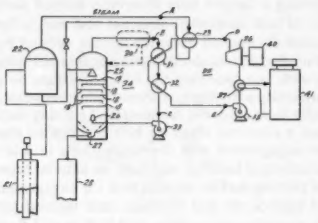
POWER GENERATION FROM HOT BRINES

Arthur J. L. Hutchinson, Pasadena, Calif., assignor to Geothermal Investment Co., Pasadena, Calif.

Continuation-in-part of Ser. No. 301,057, Oct. 26, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,192

Int. Cl. F03g *7/00;* **F01k** *25/00*

U.S. Cl. 60—641 **20 Claims**



1. A method of recovering heat from the liquid portion of a geothermal fluid which may contain salts and other dissolved minerals comprising the steps of:

passing the geothermal liquid in heat exchange relationship in a direct contact heat exchanger with a first fluid functioning as a heat transfer fluid to heat the first fluid;

passing the heated first fluid in heat exchange relationship with a second fluid to cause the second fluid to be in a gaseous state; and

expanding the gaseous second fluid in a power extracting gas expansion device.

3,845,628

HEAT TRANSFER APPARATUS

Lucien Yehuda Bronicki, and Amnon Yogev, both of Rehovoth, Israel, assignors to Ormot Turbines (1965) Ltd., Yavne, Israel

Filed Aug. 29, 1973, Ser. No. 390,981

Claims priority, application Israel, Sept. 20, 1972, 40390

Int. Cl. F01b *7/00*

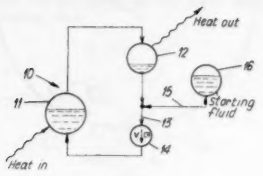
U.S. Cl. 60—656 **15 Claims**

1. Heat transfer apparatus comprising:

a. a pair of heat exchangers connected in a closed system;

b. a heat transfer fluid contained within the system and made up of a mixture of at least two fluids termed the starting and the operating fluids, the starting fluid having

a lower boiling point than the operating fluid, and a freezing point lower than the freezing point of the operating fluid whereby the application of heat to the first of the heat exchangers converts liquid fluid therein to vapor which flows into the second heat exchanger from which heat is extracted for converting the vapor therein to a liquid at a temperature and pressure lower than in the first heat exchanger;



c. means to feed liquid from the second heat exchanger into the first heat exchanger; and

d. means for trapping liquid starting fluid as it is produced by the second heat exchanger during the initial application of heat to the first heat exchanger and for preventing the return of the trapped liquid starting fluid to the first heat exchanger as long as sufficient heat is applied thereto whereby the operating fluid circulates around the system after the starting fluid is trapped.

3,845,629

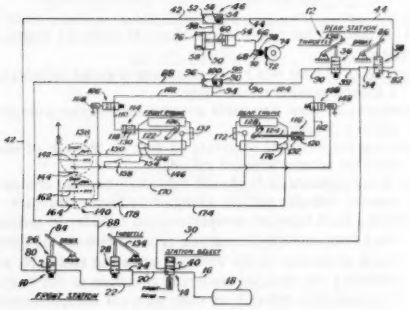
DUAL STATION THROTTLE AND SERVICE BRAKE CONTROL MEANS

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 224,700, Feb. 9, 1972, Pat. No. 3,743,064, which is a continuation-in-part of Ser. No. 52,221, July 6, 1970, abandoned. This application Mar. 26, 1973, Ser. No. 345,046

Int. Cl. F01b *21/02*

U.S. Cl. 60—719 **3 Claims**



1. Control means for a vehicle having a pair of engines, each engine including a speed and power operator means, an ignition system and a starter motor, and a first operator station; the control means comprising:

a throttle valve means in the first station;

conduit means connecting the throttle valve means with said operator means on both engines;

a pair of solenoid valve means interposed in the conduit means between the throttle valve means and operator means and when energized blocking communication therebetween;

a first electrical switch capable of energizing the starter motor and the ignition system of one engine while simultaneously energizing the solenoid valve means on the other engine, and a second electrical switch capable of energizing the starter motor and ignition system of said other engine while simultaneously energizing the solenoid valve means on said one engine.

3,845,630

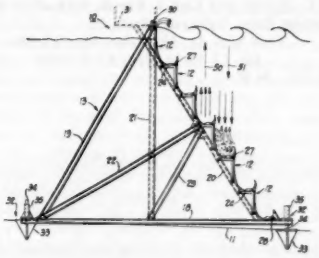
MECHANICAL REEF

Joseph Karnas, 127 Miller Rd., Avon Lake, Ohio 44012

Filed July 25, 1973, Ser. No. 382,304

Int. Cl. E02b *3/04*

U.S. Cl. 61—4 **11 Claims**



1. A mechanical reef for attenuating waves in water comprising a plurality of deflector panels, each of said panels having an arcuate configuration and presenting an upwardly concave surface which defines a channel, and frame means supporting said panels in a stepwise arrangement so that the channels defined by said panels are positioned to intercept the downwardly moving water in waves, whereby the downwardly moving water enters the channels and whirls in a turbulent manner to dissipate its kinetic energy.

3,845,631

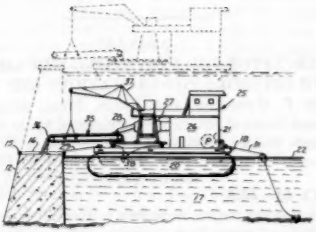
DAM BUILDING SYSTEM

George L. Malan, 560 E. Rowland Apt. G-3, Covina, Calif. 91722

Continuation-in-part of Ser. No. 66,980, Aug. 26, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,535

Int. Cl. E02b *7/04*

U.S. Cl. 61—30 **21 Claims**



1. A process for building a dam at a damsite across a stream of water comprising: forming a pool upstream of the damsite and adjacent thereto; placing water in the pool; floating a floating platform in said pool, said floating platform bearing a concrete mixing plant and a concrete conveyor means for the concrete mixed by the mixing plant; discharging concrete

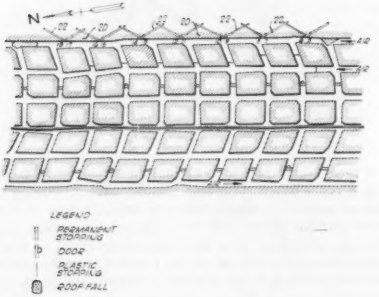
from said concrete conveyor means at a placement site on the damsite so as to build the dam and progressively increase its height, permitting the elevation of the surface of the pool to rise as the dam's height increases, but maintaining the said height so that the surface of the pool is lower than the top of the dam and placing the floating platform in the pool so that the top of the dam is within the reach of the concrete conveyor means, whereby the concrete is mixed at a location relatively close to the placement site, and moving the platform from side to side in the pool so as to keep to a minimum the distance by which the concrete must be transported relative to the face of the dam.

3,845,632

METHOD OF SEALING COAL AGAINST METHANE EMISSION

Robert L. Slobod, and Emil J. Burcik, both of c/o 26 Mineral Industries Bldg., University Park, Pa.

Filed May 21, 1973, Ser. No. 362,280
Int. Cl. E02d *3/14;* **E21f** *15/00*
U.S. Cl. 61—36 R **16 Claims**



1. A process for reducing gas emission at an exposed face in a coal seam during subterranean mining of the seam by blocking and diverting the gas to a non-worked location in the mine comprising injecting into the seam at multiple locations to enter cracks and fissures at the bedding planes in the coal seam at locations spaced inwardly in the seam from the exposed face, a pumpable silicic acid colloidal dispersion capable of setting up to a semi-solid gel in said cracks at the bedding planes and thereby sealing said cracks and fissures against gas movement, said colloidal dispersion being characterized in having a viscosity, when injected, of less than 6 centipoises, a pH of from about 2.0 to about 12.0 and an SiO_2 concentration of at least 0.25 weight percent.

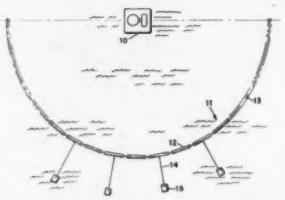
3,845,633

INTERCEPTOR FOR PREVENTING SHIP COLLISIONS WITH OFFSHORE POWER STATIONS AND THE LIKE

Roland P. Hammond, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 13, 1973, Ser. No. 424,256
Int. Cl. E02b *3/20*
U.S. Cl. 61—46.5 **1 Claim**

1. A floating barrier to protect a fixed offshore installation in a body of water from collision with a ship comprising a tension-resisting, high-strength steel cable encased with a water-proof cover, said cable encircling said installation; a plurality of crushable float elements spaced along and supporting said cable to maintain said cable near the surface, each of said float elements being a hollow log, said encased cable being threaded through all of said float elements, each of said hollow log floats comprising alternate layers of sheet metal and foamed plastic; and a plurality of anchors equal in number to said float elements with each anchor connected to a respective float element and disposed radially outward from said installation and cable, to maintain said cable generally in circular configuration surrounding said installation, the connection between each float element and its associated anchor being at least four times as long as the water depth under the



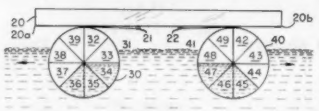
respective float element to prevent lifting the anchor from the sea floor, each of said anchors being provided with at least two flukes projecting downward from the anchor into the floor of the body of water to provide a fixed retarding force upon said cable to oppose any force by a colliding ship directed against said cable radially inward toward said installation such that the combined retarding force effected by the affected anchors will prevent collision of said ship with said installation.

3,845,634

DUAL HYDRO WINCH LIFT MECHANISM

Edgar N. Rosenberg, and Stephen F. Moran, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1973, Ser. No. 412,380
Int. Cl. B63c *1/06;* **B63b** *35/00*
U.S. Cl. 61—46.5 **8 Claims**



1. A method for deploying an elongate undersea structure comprising:

arranging at least two buoyant compartmented cylinders in a spaced parallel relationship;

wrapping at least one cable about each buoyant compartmented cylinder;

placing the elongate structure to rest on the top of each buoyant compartmented cylinder;

securing opposite ends of each cable to a buoyant compartmented cylinder and the elongate undersea structure;

rotating each buoyant compartmented cylinder to position each buoyant compartmented cylinder outside the downward projection of the elongate undersea structure; and lowering the elongate undersea structure to the bottom by continued rotation of each buoyant compartmented cylinder.

3,845,635

PHASE-SEPARATING SPRAY HEADER

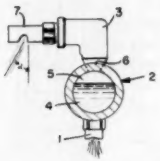
Warren Edwin Perkins, Wyckoff, N.J., and Michael Anthony Marchese, Elmsford, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,734
Int. Cl. F17c *7/02*
U.S. Cl. 62—51 **4 Claims**

1. Apparatus for selectively dispensing liquid phase cryogen from a two-phase cryogenic fluid onto products to be

refrigerated passing beneath said apparatus, comprising in combination:

1. at least one liquid spray nozzle having an inlet port and a discharge rate-controlling orifice for directing a spray of liquid cryogen upon the products to be refrigerated,
2. manifold means for conveying said two-phase cryogenic fluid to said spray nozzle, said manifold means being connected to a source of cryogenic fluid and having an upper and a lower section, said inlet port of said liquid spray nozzle being located in the lower section of said manifold means, and



3. at least one vapor venting nozzle for continuously directing substantially all of the vapor phase cryogen into the surrounding atmosphere, said vapor venting nozzle having an inlet port located in the upper section of said manifold means, and a discharge rate controlling orifice communicating with the surrounding atmosphere, the equivalent cross-sectional area of the discharge orifice of said vapor venting nozzle being from about 1/3 – 2/3 of the equivalent cross-sectional area of the discharge orifice of said liquid spray nozzle.

3,845,636

CONTROL DEVICE FOR MAINTAINING THE LEVEL OF A LIQUIFIED GAS IN A CONTAINER BETWEEN TWO DIFFERENT LIMITS

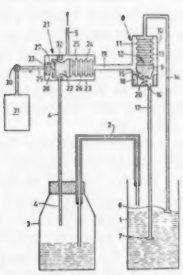
Harmannus Hinderikus Van Mal; Andries Mijnheer; Hendrik Jan Rauwerdink, and Johannes Adrianus De Wit, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 153,244, June 15, 1971,. This application Aug. 17, 1972, Ser. No. 281,342

Claims priority, application Netherlands, June 26, 1970, 7009420

Int. Cl. F17c *7/02*

U.S. Cl. 62—55 **7 Claims**



1. A control device for maintaining the level of a liquefied gas in a container between two different limits, the container communicating via a siphon, with the liquid space of a storage container, the vapour space of which can be made to communicate with a vapour outlet, said control device comprising a first vapour pressure bulb arranged at the higher limit and a second vapour pressure bulb arranged at the lower limit, the bulbs containing a medium under pressure which condenses at the temperature of the liquefied gas, the medium pressures being capable of actuating first and second control valves in such a manner that the communication of the vapour space of the storage container with the vapour outlet is interrupted by the said valves when the level of the liquefied gas in the container drops below the lower limit, and is released when the level exceeds the higher limit, characterized in that the first control valve is constituted by a first piston-like member which is incorporated in a first housing and can reciprocate therein in the axial direction and which constitutes with its one end face a wall of a first space which is in open communication with the first vapour pressure bulb and is otherwise closed, and constitutes with its other end face also the boundary of a second space which is in open communication with the second vapour pressure bulb, the second space furthermore comprising a communication which, when the first piston-like member reciprocates, is alternately closed and released by said member, the second control valve being constituted by a second piston-like member which is accommodated in a second housing with some amount of play and can reciprocate therein in the axial direction, and which constitutes with its one end face a wall of a third space which communicates with the communication with the second space and is otherwise closed and with its other end face also constitutes the boundary of a fourth space which communicates with an auxiliary vessel containing a pressure medium, the second piston-like member upon reciprocation being capable of communicating the vapour space of the storage container alternately with the fourth space and the vapour outlet, the medium pressures in the vapour pressure bulbs, the pressure medium pressure in the auxiliary vessel, and the surface areas of the end faces of the piston-like members being furthermore chosen to be so that, when the level of the liquefied gas in the container lies below the second vapour pressure bulb, the resulting force on the first piston-like member causes said member to assume a position in which the second space is in open communication with the third space and the resulting force on the second piston-like member causes the said member to assume a position in which the vapour space of the storage container is in open communication with the fourth space, in which, when the said level rises due to siphoning action, when the second vapour pressure bulb is reached the resulting force on the first piston-like member causes said member to interrupt the communication between the second and the third space with a remaining medium pressure in the third space, in which the second piston-like member maintains the open communication between the vapour space and the fourth space, in which, when the said level reaches the first vapour pressure bulb, the resulting force on the first piston-like member causes said member to assume a position in which the open communication between the second and the third space is restored, and, as a result of the falling medium pressure in the third space, the second piston-like member interrupts the communication between the vapour space and the fourth space and produces an open communication between the vapour space and the vapour outlet.

3,845,637

DEFROST CYCLE INITIATION SYSTEM

Glen C. Shepherd, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

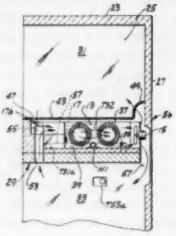
Filed Sept. 6, 1973, Ser. No. 394,947

Int. Cl. F25d *21/06*

U.S. Cl. 62—155 **13 Claims**

1. A defrost cycle initiation system for refrigeration apparatus having cooling means for absorbing heat from a refrigerated zone, said cooling means being subject to frost build-up, said refrigeration apparatus having a main flow path for the intake of air from said refrigerated zone, for passage of the air over said cooling means to chill the air and for the discharge of the chilled air into the refrigerated zone, and a blower for forcing the air through said main flow path; said system com-

prising an auxiliary flow path providing communication between said main flow path and said refrigerated zone, air normally flowing in said auxiliary flow path from said refrigerated zone to said main flow path when said refrigeration apparatus is in its normal mode of operation, means for sensing the temperature of air flowing through said auxiliary flow path adapted to initiate a defrost cycle upon sensing a predetermined initiation temperature of air, and means for effecting a



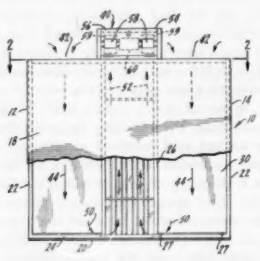
reversal of flow of air in said auxiliary path in response to build-up of frost on said cooling means there-by to direct air having a temperature less than said predetermined initiation temperature through said auxiliary flow path to lower the temperature of the air sensed by the sensing means below said predetermined initiation temperature and for reestablishing the flow of air in said auxiliary flow path from said refrigerated zone to said main flow path upon clearing the cooling means of frost.

3,845,638

PLATE REFRIGERATION AIR SYSTEM

Joseph P. Apple, Jr., Arlington Heights, and William E. Lauterbach, Evanston, both of Ill., assignors to Dole Refrigerating Company, Chicago, Ill.

No Drawing. Filed June 26, 1973, Ser. No. 373,669
Int. Cl. F25d *17/06*
U.S. Cl. 62—426 **13 Claims**



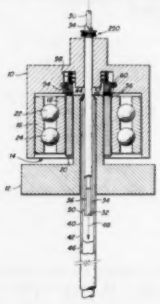
1. In a vehicle eutectic plate refrigeration system, a cover, at least one eutectic plate positioned within said cover, said cover being closed on the bottom, sides, front and rear, an air inlet and an air discharge adjacent the upper end of said cover, power means positioned to force air out of said air discharge, and air passage means within said cover and associated with said plate defining air passages which extend from said air inlet adjacent the top of said cover, down along a portion of the plate to the bottom of the plate and then upwardly along a different portion of the plate to the air discharge, said air passage means being substantially coextensive with said plate whereby substantially all of the plate surface is wiped by air moving in said air passage means and the moving air is in contact with said plate through substantially its entire path from said air inlet to said discharge.

3,845,639

RELATIVELY ROTATABLE CRYOGENIC TRANSFER SYSTEM

Joseph L. Smith, Jr., Concord, and Philip Thullen, Dover, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 30, 1972, Ser. No. 257,640
Int. Cl. F25b *31/12*
U.S. Cl. 62—505 **4 Claims**



1. A relatively rotatable cryogenic transfer apparatus for transferring fluid between two relatively rotatable devices which are rotatable relative to each other at significant speeds said apparatus comprising:

a housing;

a first unit fixed to said housing and including a first relatively long, stiff, thin, low thermal conductivity conduit and a second relatively long, stiff, thin, low thermal conductivity conduit spaced from and surrounding said first conduit to form a vacuum insulating space therebetween;

a second unit including a third relatively long, stiff, thin, low thermal conductivity conduit surrounding and spaced from said first unit to provide a first relatively long, narrow relative motion gap that provides a relatively stagnant environment in which convection currents are minimized and vapor from the fluid acts as an insulator, said second unit further including a fourth relatively long, stiff, thin, low thermal conductivity conduit surrounding and spaced from said third conduit to provide a vacuum insulating space therebetween;

first means for relatively rotatably interconnecting said housing and said second unit for maintaining said housing and second unit in uniform spaced alignment and having its heat-producing relative motion contacting parts disposed in a first ambient temperature portion of said apparatus proximate the area where said first unit is fixed to said housing remote from the supercooled portions of the apparatus, including an alignment bearing with two relatively rotatable parts one fastened to said housing the other to said second unit;

second means for relatively rotatably interconnecting said housing and said second unit disposed in a second ambient temperature portion of said apparatus spaced from said first ambient temperature portion and remote from the cooler portions of said apparatus, including an alignment bearing with two relatively rotatable parts one fastened to said housing the other to said second unit;

first port means in said housing between said first and second ambient temperature portions;

said fourth conduit being spaced from said housing to provide a second relatively long, narrow, relative motion gap extending from said first port means to said first ambient temperature portion and a third relatively long, narrow, relative motion gap extending from said first port means to said second ambient temperature portion, each of said second and third relative motion gaps providing a rela-

tively stagnant environment in which convection currents are minimized and vapor from the fluid acts as an insulator;

first sealing means between said housing and second unit in said first ambient temperature portion for sealing the ambient temperature end of said first relative motion gap and of said second relative motion gap including a first sliding seal engaging one of said housing and said second unit and a second seal engaging the first seal and the other of said housing and said second unit; and

second sealing means between said housing and said second unit in said second ambient temperature portion for sealing the ambient temperature end of said third relative motion gap, including a first sliding seal engaging one of said housing and said second unit and a second seal engaging the first seal and the other of said housing and said second unit.

3,845,640

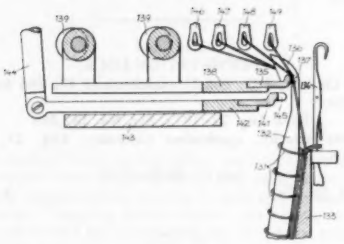
METHOD AND APPARATUS FOR PRODUCING A KNITTED FABRIC WITH PROJECTING BARBS

Norbert Waller, Weil im Schoenbuch, Germany

Continuation of Ser. No. 159,036, July 7, 1971. This application Sept. 4, 1973, Ser. No. 394,307

Int. Cl. D04b *35/00*

U.S. Cl. 66—91 **1 Claim**



1. In a warp knitting machine for producing a one-face fabric having a base fabric and relatively long-drawn plush loops of monofilament threads of a thermoplastic material knitted into said base fabric and projecting substantially vertically therefrom and being set by a heat treatment and fixed in said vertical position by being dressed with a sizing material, and each of said loops then being opened at one lateral side so as to form a barb with a narrow head, means for holding each of said loops for a sufficient length of time for being set by said heat treatment before it is fixed and cut open to form said barb, wherein said knitting machine has a single needle bar, and in which said loops are formed by winding said thread around the upper ends of said loop holding means, said means comprising a plurality of lancets each being held by said loops so as to extend parallel to the row of needles of said needle bar within the space between two adjacent needles, and upper and lower lancet holding means disposed substantially vertically above each other and extending in a direction substantially vertical to said lancets and said row of needles and adapted to reciprocate alternately to each other in said direction so that one of said lancet holding means engages with said lancets when the other lancet holding means disengages from said lancets, said upper lancet holding means being adapted to engage with said lancets at the upper ends thereof for holding them in their longitudinal and lateral directions while the old loops of the base fabric are knocked over, said lower lancet holding means being adapted to engage with said lancets so as to hold them laterally when said upper lancet holding means are retracted from said lancets, said lancets having such a length that, when said loops slide successively downwardly along each of said lancets during the alternating reciprocating movements of said upper and lower lancet holding means, said loops remain for a sufficient length of time on said lancets so as to be set.

3,845,641

METHOD AND APPARATUS FOR PRODUCING A KNITTED FABRIC WITH PROJECTING BARBS

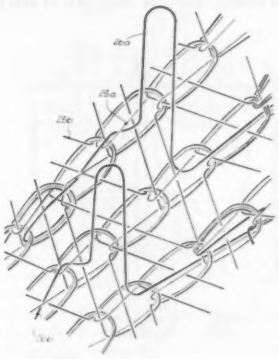
Norbert Waller, Weil im Schoenbuch, Germany, assignor to Binder Gottlieb, Holzgerlinger, Germany

Division of Ser. No. 852,295, Aug. 22, 1969, Pat. No. 3,654,054. This application July 1, 1971, Ser. No. 159,036

Claims priority, application Austria, Aug. 26, 1968, 8315/68

Int. Cl. D04b *23/08, 23/10*

U.S. Cl. 66—192 **13 Claims**



1. A method of producing a knitted one face fabric having courses and wales and on the back face of said fabric upstanding fastener elements being formed by projecting end parts of a multiplicity of cut monofilament threads of a thermoplastic material comprising the steps of knitting a base fabric, knitting at least one monofilament thread of a thermoplastic material into said base fabric so as to form loops on the back side of said base fabric and in said base fabric at least one stitch between each two loops, each of said loops having a pair of foot portions and a head portion, said pairs of foot portions entering into said base fabric in the same course and in two adjacent wales, stretching, heatsetting, and erecting said loops to an erected position so as to form long drawn loops, then dressing said knitted fabric with a sizing material to fix said long drawn loops in said erected position, and then severing at least a part of said long drawn loops to form said fastener elements.

3,845,642

WASHING MACHINE TRANSMISSION SYSTEM

J. Richard Cochran, Ripon, Wis., assignor to McGraw-Edison Company, Ripon, Wis.

Filed Jan. 15, 1973, Ser. No. 323,761

Int. Cl. D06f *23/04*

U.S. Cl. 68—23.7 **8 Claims**

1. A drive mechanism for a laundry machine having a vertical spin tub and an agitator therein, said agitator having a generally conical shaped base, said mechanism comprising:

a reversible motor operatively connected to a pulley that is adapted to be driven in either direction,

means for rotatively driving said spin tub upon rotation of said pulley in one direction,

means for braking said spin tub against rotation during rotation of said pulley in a second direction,

agitator transmission means being substantially contained within the area defined by said conical shaped base and comprising,

a rotatable input shaft, means for rotating said input shaft in response to rotation of said pulley in the second direction,

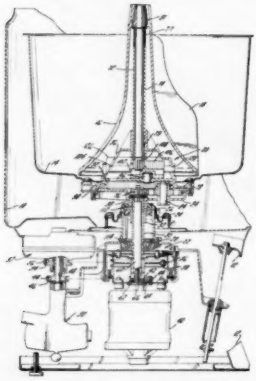
an output shaft connected to said agitator,

a generally conical shaped, substantially fluid tight housing, said housing being attached to the lower center portion of said spin tub;

said rotatable input shaft having a pinion gear at its upper end,

a reducer having a pair of concentric gears, one of which is larger and adapted to mesh with said pinion gear;

a rotatable internal gear, the outer circular periphery of which is substantially smooth to slidingly contact the cooperating inner surface of said housing, the internal teeth of which engage the other gear of said reducer, the



upper surface of said internal gear supporting an eccentrically positioned pin,

a rack carriage having a straight toothed bar and a horizontal slideway positioned generally perpendicular to said toothed bar, said rack having a slider adapted to overlie said pin supported by said internal gear, said slider being slidable within said slideway,

means for guiding said rack carriage to limit movement thereof to only reciprocating along a path parallel to said toothed bar and

said output shaft including a pinion gear meshing with said toothed bar,

so that rotation of said drive shaft rotates said reducer and internal gear, said internal gear moving said slider in an orbital path to thereby reciprocate the rack carriage along said path, the reciprocating toothed bar of said rack carriage causing rotational oscillation of said shaft pinion gear and agitator.

3,845,643

WHEEL LOCKING DEVICE

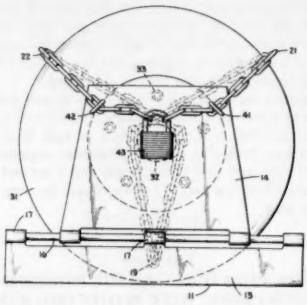
Robert M. Barrett, 4439 W. 34th St., Indianapolis, Ind. 46222

Filed Nov. 9, 1973, Ser. No. 414,285

Int. Cl. E05b *73/00;* **B60t** *3/00*

U.S. Cl. 70—18 **5 Claims**

1. An apparatus for immobilizing an axle-supported wheeled vehicle, said apparatus comprising a drive-on tray having upwardly flanged side margins and adapted to underlie a vehicle wheel received between said margins, a shielding flap hinged to the outer flanged margin of the tray and adapted to be moved to extend outwardly and sidewardly while a vehicle wheel is entering said tray and to pivot upwardly to a generally vertical position when the vehicle wheel is in place on the tray thereby masking the wheel lug bolts or the like attaching the wheel to the vehicle, an elongated flexi-



ble member wrapped about the vehicle axle, and a releasable locking member tightly joining said flexible member to said shielding flap when the flap is in its said generally vertical position.

3,845,644

PERMUTATION LOCK

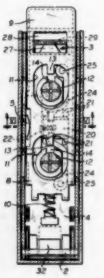
Gisela Lindner, P.O. Box Friedrichstrasse 47, 586 Iserlohn, Germany

Filed Aug. 21, 1972, Ser. No. 282,569

Claims priority, application Germany, Aug. 21, 1971, 2142065

Int. Cl. E05b *65/52*

U.S. Cl. 70—74 **3 Claims**



1. A permutation lock with a permutation set-over device, comprising

a setting handle carrying marks being rotatably mounted relative to an annular-shaped locking disc,

said locking disc having a feed-in opening for entering of a lock tongue of a sliding bolt at a correctly set permutation,

said sliding bolt being blocked against any longitudinal displacement upon false set permutation,

a locking slide means for blocking said sliding bolt, and

a control lever operatively connected to said locking slide and cooperating together with a peripheral face of said locking disc such, that said locking slide means enters into a position releasing said sliding bolt by said correctly set permutation.

3,845,645
METHOD AND APPARATUS FOR THE PRODUCTION OF HELICAL SEAM PIPE

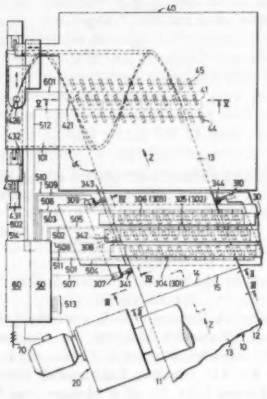
Hans Gebauer, Dortmund-Herne, Germany, assignor to Hoesch Maschinenfabrik Deutschland Aktiengesellschaft, Dortmund, Germany

Filed Oct. 25, 1973, Ser. No. 409,719

Claims priority, application Germany, Oct. 28, 1972, 2253025

Int. Cl. B21c *37/083*

U.S. Cl. 72—12 **9 Claims**



1. A method for producing helical seam pipe from an endlessly welded metal strip, said metal strip being shaped into a generally cylindrical pipe in a pipe forming mechanism including a triad of bending rollers wherein one of said rollers is positioned on one side of said strip and two of said rollers are positioned on the opposite side of said strip, with pipe guide means arranged to engage said formed pipe to adjust the angular position thereof relative to said pipe forming mechanism, said method comprising the steps of feeding said strip to said pipe forming mechanism, measuring said strip prior to its entry into said pipe forming mechanism, deriving control signals from the measured values of said strip, applying said derived signals to control the operating positions of both said pipe forming mechanism and said pipe guide means, and delaying said application of said control signals for preselected periods corresponding to the time required for portions of said strip at which said measured values are taken to travel from said measuring location to said pipe forming mechanism and said pipe guide means, respectively.

3,845,646
DIAGONAL ROLLING MILL

Manfred Bellmann, Breitscheid, and Gerd Pfeiffer, Mulheim, both of Germany, assignors to Mannesmannrohren-Werke Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 9, 1972, Ser. No. 305,087

Claims priority, application Germany, Nov. 11, 1971, 2156595

Int. Cl. B21d *37/12*

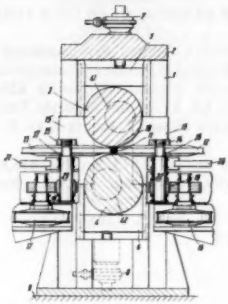
U.S. Cl. 72—100 **5 Claims**

1. In a diagonal rolling mill having a stand on a mill floor and a pair of rolls in a housing, the rolls being inclined to the axis of rolling in the pass as well as to each other, the improvement comprising:

the rolls of the pair arranged one above the other relative to the mill floor, the roll housing having lateral access openings for access to the pass from opposite sides;

a pair of guide disks each having an axis disposed in vertical orientation;

two pivot arms respectively for journalling the guide disks and being pivotably connected to the housing, one on each side of the pass for pivoting on vertical axes and for displacing the disks in horizontal direction in the level of and laterally with respect to the pass, towards and away therefrom upon pivoting of the arms in one or the opposite direction, so that the disks respectively reach into the pass through said openings for engaging a billet when worked in the pass by the rolls or are removed from such engagement;



means for pivotally adjusting the arms for adjustment of the disks as to engagement with the billet and for holding the arms in an adjusted disposition, wherein the disks engage the billet;

means for releasably locking the arms in an adjusted disposition, the arms upon being released being permitted to swing the disks out of engagement with the billet; and

drive means on the arms for driving the disks.

3,845,647
STATOR ASSEMBLIES FOR DYNAMO ELECTRIC MACHINES

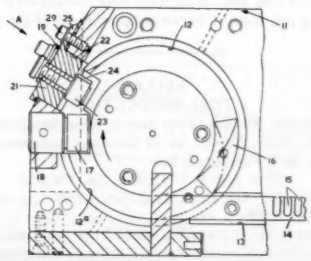
Robert Cockin, Quarry Bank, near Brierley Hill, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Oct. 10, 1972, Ser. No. 296,158

Claims priority, application Great Britain, Oct. 8, 1971, 46851/71

Int. Cl. B21f *35/02*

U.S. Cl. 72—137 **7 Claims**



1. A method of forming a stator assembly for a dynamo electric machine, of the kind including a laminated member in

the form of a helically coiled metal strip, comprising, driving a metal strip into a former which coils the strip helically, and, imparting to the strip as it is coiled a set such that the convolutions of the coiled strip produced are biassed towards one another in an axial direction into facial contact with one another by their own inherent resilience, so that the helical coil of metal strip is produced in a collapsed condition, the set being imparted to the strip by deflecting the strip relative to its initial plane during passage through the former.

3,845,648

CANTILEVER BENDING HEAD OF A TUBE BENDING MACHINE

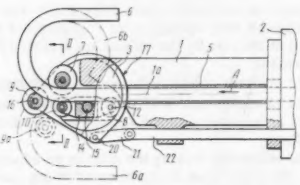
Vladimir Nikolaevich Shubin, Pervomaiskaya ulitsa, 1, kv. 103; Viktor Sergeevich Silantiev, Kastanaevskaya ulitsa, 57, korpus 1, kv. 58; Alexandr Sergeevich Khlyntsev, Kolenchataya ulitsa, 4-a, kv. 8, and Antonina Petrovna Barsova, Sheremetievskaya ulitsa, 67, korpus 2, kv. 5, all of Moscow, U.S.S.R.

Filed Nov. 14, 1973, Ser. No. 415,660

Claims priority, application U.S.S.R., Nov. 30, 1972, 1851659

Int. Cl. B21d *7/08*

U.S. Cl. 72—173 **2 Claims**



1. A cantilever bending head for tube bending machines having drive means, comprising: a casing with lateral walls and an axial, longitudinal passway for the tubes; two coaxial discs secured in a cantilever fashion to said walls by their inner faces so that the axis of said discs is perpendicular to the axis of said casing; bending means including a backup roll secured immovably between said discs on one side of said casing axis, for bending the tubes around it; a supporting roll between said discs on the other side of said casing axis, to assume a reaction force developing in the course of bending; a turnable lever adjusted to turn in a bending plane, kinematically coupled with said drive means and having two parallel cheeks which have two coaxial through holes whose diameter is equal to that of said discs, and by which holes said cheeks are set on respective ones of said discs to be flush with both of said faces; and a bending roll secured between said cheeks of the lever.

3,845,649

TUBE PRODUCTION

Josef Gerretz, Viersen; Paul Joeres, Monchengladbach, and Fritz Zeunert, Rheydt, all of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed July 5, 1973, Ser. No. 376,838

Int. Cl. B21b *21/06, 17/00*

U.S. Cl. 72—189 **5 Claims**

1. A method of producing tubes from tube billets by cold reduction by a cooperative pair of roll dies of a pilger mill, the steps of:

intermittently rotating the tubes about their major axis and fro through a predetermined angle, said first rotation being one or more times in one direction and thereafter the rotation being one or more times in the opposite

direction and wherein said rotation takes place during the periods of the cold reduction operation when the tubes are free of said roll dies.

3,845,650

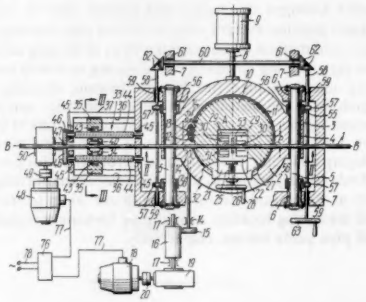
MACHINE FOR MANUFACTURING A COIL OF A PIPE BY BENDING IT

Boris Mikhailovich Romanov, Universitetsky prospekt 5, kv. 11; Evgeny Nikolaevich Moshnin, ul. Akademika Pavlova 50, kv. 5; Stanislav Ivanovich Yanov, ul. I. Susanina 6, korpus 1, kv. 12; Vladimir Zakharovich Gurevich, Yasny proezd 4, korpus 1, kv. 20, all of Moscow, and Viktor Ivanovich Ryabokobylenko, ul. Popova, 18, kv. 37, Belgorod, all of U.S.S.R.

Filed Jan. 19, 1973, Ser. No. 325,196

Int. Cl. B21d *11/07*

U.S. Cl. 72—310 **13 Claims**



1. A machine for manufacturing a coiled pipe by bending the latter, comprising: a turntable rotating alternately clockwise and anticlockwise under the action of said pipe and adapted to effect additional movement at right angles to the longitudinal axis of said pipe; means for imparting said additional movement to sai turntable in two mutually opposite directions; at least two clamps having jaws being provided on said turntable and mounted so that a gap formed by a pair of jaws in one said clamp is in coaxial alignment with a similar gap of the other clamp while the machine is inoperative, said clamps being adapted to alternately engage said pipe after each rotation of said turntable; means in each of said clamps for raising and lowering movable parts thereof carrying the

jaws; means for braking the rotational speed of said turntable, said last-mentioned means together with said turntable, said means for moving the turntable at right angles to the longitudinal axis of the pipe, and said clamps, forming a bending mechanism; heating means mounted on a stationary base between said clamps and adapted to heat said pipe in the zones of formation of the U-bends of the coil; a guiding sleeve mounted on said stationary base adjacent said heating means and adapted to facilitate passing there-through of said pipe toward said heating means while concurrently absorbing reaction forces produced by the bending of said pipe; means for moving said pipe along its longitudinal axis toward said bending mechanism and interacting with said means for braking the rotations of said turntable in response to the action of said means for axially moving said pipe, the latter means imparting motion to said turntable through the medium of said pipe due to the latter being fixed in one of said clamps; said pipe being bent in response to successively fixing said pipe in one of said clamps on said turntable, heating said pipe in the zone of formation of the future U-bend, moving said pipe along its longitudinal axis by said means for its axial movement and braking said turntable by said braking means as this table rotates under the action of said means for moving said pipe along its longitudinal axis, said turntable being rotated through the medium of this pipe and the braking of the table being necessary in order to build up the required axial compression of said pipe so as to prevent or reduce the thinning of its walls in the zone of formation of said U-bend; after completing the formation of this U-bend and releasing said pipe from said clamp, shifting said turntable at right angles to the longitudinal axis of said pipe and then advancing the latter toward said bending mechanism and fixing it in the other clamp, whereupon all said operations are resumed in the above-described succession.

3,845,651

METHOD AND DEVICE FOR THE PRECISION SHAPING OF A METAL PART

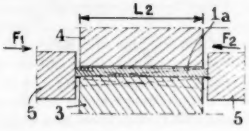
Jean-Baptiste Paul Vau, 7 Avenue Berthet, 95 Sannois, France

Filed Dec. 13, 1972, Ser. No. 314,677

Claims priority, application France, Dec. 13, 1971, 71.44681

Int. Cl. B21j *5/02*

U.S. Cl. 72—332 **2 Claims**



1. A method of forming and stress-relieving a sheet-metal blank comprising the steps of:

a. pressing a sheet-metal blank, having a length between 1 and 10 percent greater than that of the finished article to be produced, in a die cavity between a pair of dies relatively movable transversely to said blank to bend said blank and apply bending stress thereto, while confining said blank in a die cavity having a width and thickness corresponding to that of said article and slightly exceeding at all points those of said blank by causing said dies to engage respective abutments, at least one edge of said blank projecting laterally from said cavity; and

b. pressing a tool into said edge to upset said blank and cause the material thereof to fill said cavity by swelling, thereby relieving said bending stress.

3,845,652

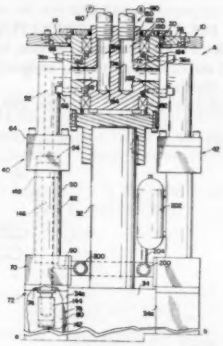
ROTARY HYDRAULIC PRESS

Anatol Michelson, Media, and Clifford Pace, Chester, both of Pa., assignors to Gulf & Western Manufacturing Company, Hastings, Mich.

Filed Oct. 2, 1973, Ser. No. 402,847

Int. Cl. B21d *22/28*

U.S. Cl. 72—349 **9 Claims**



1. A rotary hydraulic press comprising, in combination: a support shaft; means for rotating said shaft about its axis; a plurality of work stations circumferentially spaced around said axis and mounted to rotate with said shaft; each of said stations comprising a cylinder with an internal power piston, a first chamber on one side of said piston and a second chamber on the other side of said piston, a first port means communicated with said first chamber, a second port means communicated with said second chamber, means for supporting a first tool on said cylinder; means for supporting a second tool on said piston and between said cylinder and said means for supporting said first tool, and means for drivingly connecting said cylinder onto said shaft; and valve means for selectively connecting said first port with a source of fluid under pressure, said valve means including a generally stationary element having a two ended port with one end connected with said source and means for rotating said first port means into and out of communication with said other end of said two ended port whereby said second tool is driven toward said first tool.

3,845,653

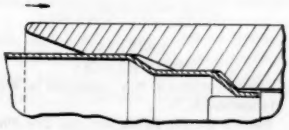
DOUBLE STAGE NECKING

John T. Hilgenbrink, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 126,681, March 22, 1971, Pat. No. 3,786,957. This application Jan. 5, 1973, Ser. No. 321,224

Int. Cl. B21d *19/02*

U.S. Cl. 72—354 **1 Claim**



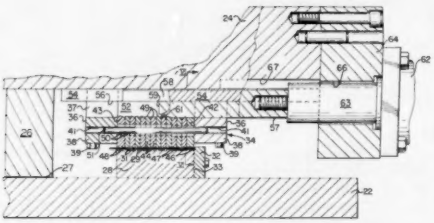
1. A method of necking-in thin wall can bodies to a degree heretofore impossible comprising the steps of necking-in an elongated end portion of a can body to a degree materially less than the desired degree of necking-in and then in a separate operation utilizing only an external die and a plug die further necking-in said previously necked-in portion to the desired degree, said further necking-in step being performed on a free

end portion only of said necked-in elongated end portion said necked-in end portion includes an elongated cylindrical part, and said can body is supported adjacent said necked-in end portion during the further necking-in step and said necked-in end portion cylindrical part is separately supported during said further necking-in step adjacent that part of said necked-in portion being further necked-in.

3,845,654
DIE FORMING APPARATUS

Francis W. Fuller, Peoria; Samuel L. Melvin, Morton, and Paul H. Merritt, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 13, 1973, Ser. No. 379,402
Int. Cl. B21d 5/02
U.S. Cl. 72—381 **18 Claims**



1. A die forming apparatus for forming a multiplicity of corrugations in a workpiece of substantially flat sheet material, comprising;

a stationary die;

a movable die disposed in opposing relation to said stationary die and movable toward and away from said stationary die between a workpiece loading and unloading position and a forming position, said movable die having a plurality of die members disposed for individual movement toward said stationary die when said movable die is in said forming position and for unitary movement to said loading and unloading position; and

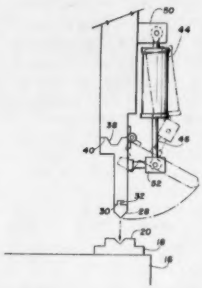
powered means operatively associated with said movable die for powerably moving said die members individually sucessively toward said other die so that each of such corrugations is positively and fully formed in each area of engagement by each of said die members progressively from one end of the workpiece to the other unformed end to permit substantially unrestrained gathering of the workpiece from the unformed end with all of the corrugations formed in the workpiece in a single cycle of said powered means.

3,845,655
PRESS BRAKES

Adrian H. Krieg, Yorktown, N.Y., assignor to Widder Corporation, Mamaroneck, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,096
Int. Cl. B21j 13/02
U.S. Cl. 72—389 **4 Claims**

1. A brake press comprising a frame, an elongated top beam and a bottom beam, said top beam being mounted in said frame to have a bottom edge movable in a vertical plane toward and away from said bottom beam, a tool having an upper edge substantially coextensive with the bottom edge of said top beam for engaging a workpiece, hinge means attached to the upper edge of said tool and the lower edge of said top beam pivotally connected to said tool and top beam for con-

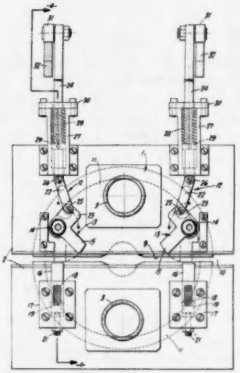


joint movement therewith and for swinging movement relative thereto and means for moving said tool about said hinge into and out of the plan of said top beam movement.

3,845,656
DIE-STABILIZING MECHANISM FOR A SPLIT FLANGING DIE UNIT

Harry C. Spaan, Stockton, Calif., assignor to Carando Machine Works, Stockton, Calif.

Filed Jan. 2, 1974, Ser. No. 430,034
Int. Cl. B21d 41/02
U.S. Cl. 72—392 **10 Claims**



1. A die-stabilizing mechanism for a flanging die unit power-movable between a lowered position with a cylindrical sheet metal body pre-positioned in alinement thereabove and a raised position engaging in the adjacent end of said body to form an out-turned flange thereon, the die unit embodying die halves which together define a horizontal slot through the die unit, and there being power-advanced body-engaging pusher fingers which pass through the slot when the die unit is in lowered position but are clear of the slot when the die unit is in raised position; the die-stabilizing mechanism including a stop mounted in connection with the die unit to one side of the slot, a blocking member mounted in connection with the die unit to the other side of the slot, said blocking member being movable between a non-working position clear of the slot when the die unit is in lowered position and a working position spanning the slot below the die halves and engaging the slot whereby to then block said die halves against deflection toward each other when the die unit is in raised position, and

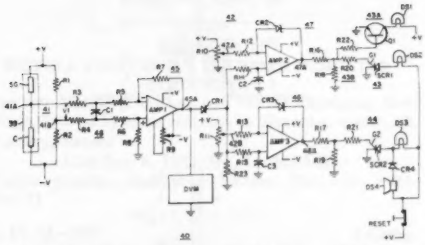
means associated with the die unit operative to cause movement of said blocking member from its non-working position to its working position in response to movement of said die unit from its lowered position to its raised position.

3,845,657

SURVEILLANCE SYSTEM INCLUDING MEANS FOR DETECTING IMPENDING FAILURE IN HIGH PRESSURE, HIGH TEMPERATURE FLUID CONDUCTING PIPES

William G. Hall, and Paul F. Pittman, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1972, Ser. No. 223,562
Int. Cl. G01b 7/18
U.S. Cl. 73—88.5 R **8 Claims**



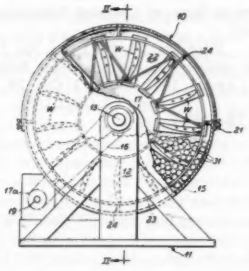
1. A monitoring system for predicting structural failure in a member subject to stress by sensing strain, comprising sensing means for sensing strain disposed proximate to said member in a region of potential strain, said sensing means having an output terminal, said sensing means providing a voltage signal at said output terminal in relation to the amount of strain sensed in said member, a high level signal detector and a low level signal detector each comprising a differential operational amplifier, each said operational amplifier having an input terminal which is connected to said output terminal of said sensing means, each said high level signal detector and said low level signal detector not being interconnected, warning means, said warning means comprising a high level warning means and a low level warning means connected to the output of said high level operational amplifier and said low level operational amplifier respectively, said output voltage signal from said sensing means being provided to said high level operational amplifier and said low level operational amplifier substantially simultaneously, said low level operational amplifier actuating said low level warning means when said strain in said member is of a first predetermined value, said high level operational amplifier actuating said high level warning means when said strain in said member is of a second relatively larger predetermined value, said input terminal of said high level operational amplifier being maintainable at an adjustable voltage potential relative to a fixed voltage potential to generally fix said second relatively larger predetermined value of strain in said member at which said high level warning means is actuated, said input terminal of said low level operational amplifier being maintainable at an adjustable voltage potential relative to a fixed voltage potential to generally fix said first predetermined value of strain in said member at which said low level warning means is actuated, said low level warning means comprising first and second low level warning sections, said first low level warning section comprising a first low level warning section electrical valve and a first low level warning section illuminating means with power supply means, wherein said latter two means are interconnected electrically, wherein output electrical current from said low level operational amplifier actuates said last mentioned valve to cause said last mentioned illuminating means to visually indicate the presence of said first predetermined value of the strain in said member, said second low level warning section comprising a reset means, a second low level warning section electrical valve, and a second low level warning section illuminating means with power supply means, wherein said latter two means are interconnected electrically, wherein output electrical current from said low level operational amplifier actuates said last mentioned valve to cause said last mentioned illuminating means to visually indicate the presence of said first predetermined value of said strain in said member and to continue to indicate the presence of said first predetermined value of said strain in said member until reset by said reset means.

3,845,658

METHOD OF DETECTING FLAWS IN THE EXTERIOR SURFACES OF HOLLOW WORKPIECES

Edward F. Conway, Arlington Heights, and Kenneth F. Conner, Lombard, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed June 22, 1973, Ser. No. 372,659
Int. Cl. G01n 19/08
U.S. Cl. 73—104 **9 Claims**



1. In a liquid penetrant method of detecting flaws in the external surface of a hollow workpiece; the improvement whereby said liquid penetrant is substantially prevented from entering into the hollow of said workpiece, said improvement comprising

coating relatively large sized particles with an amount of said liquid penetrant insufficient to cause free-flowing of said penetrant coating off of said particles,

effecting surface contact and relative movement between said coated particles and said workpiece to transfer a portion of said coating to said external surface sufficient to give an indication of flaws therein if present,

the smallest of said particles being too large to enter into the hollow of said workpiece, and

testing said coated external surface for said flaws.

3,845,659

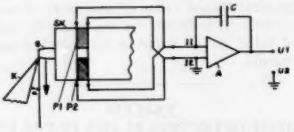
MICROTOME HAVING ELECTRO-MECHANICAL KNIFE CONTROLLING MEANS

Per Wikefeldt, and Eskil Rautio, both of Spanga, Sweden, assignors to LKB Produkter AB, Bromma, Sweden

Filed June 16, 1972, Ser. No. 263,653
Claims priority, application Sweden, June 30, 1971, 8447/71
Int. Cl. G01l 5/00
U.S. Cl. 73—133 R **4 Claims**

1. In a microtome means of the type comprising two assemblies, and means for moving one of said assemblies with respect to the other of said two assemblies, one of said assemblies including support means for a specimen to be sectioned, the other of the assemblies including support means for a knife for sectioning said specimen, one of said support means in-

cluding two piezoelectric crystals, one of the crystals being mounted to absorb compressive force during said relative movement, the other of said crystals being mounted to absorb tractive force during said relative movement, electrical current integrating means and circuit means connecting said



piezoelectric crystals with said integrating means in electrical opposition to each other, said integrating means generating a signal indicating the total charge generated by said crystals resulting from said relative movement while sectioning a specimen.

3,845,660

DETECTION OF VELOCITIES OF FLUIDS IN CONDUITS

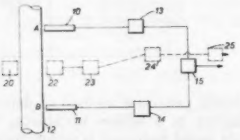
Neil Patrick Hugh McDonnell, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 25, 1972, Ser. No. 220,655

Claims priority, application Great Britain, Feb. 5, 1971, 4035/71; Apr. 5, 1971, 8658/71; Oct. 20, 1971, 48714/71

Int. Cl. G01f 1/00

U.S. Cl. 73—194 E **2 Claims**



1. Apparatus for detecting the velocity of a fluid in a conduit which comprises two directional sonic detectors directed toward the conduit at two points spaced apart along the conduit but of which the sound sensitive elements are spaced away from the conduit and means for matching signals received from the two points at different time lags between them to determine the time lag which gives the best match.

3,845,661

DEVICE FOR SECURING A TEMPERATURE SENSOR TO A VESSEL WALL

Walter Hollweck; Wilhelm Schnee; Karlheinz Eberl, and Kurt Wagner, all of Nurnberg, Germany, assignors to Inter Control Herman Kohler Elektrik GmbH & Co. KG, Nurnberg, Germany

Filed July 20, 1973, Ser. No. 381,249

Claims priority, application Germany, July 20, 1972, 2235676

Int. Cl. G01k 1/14

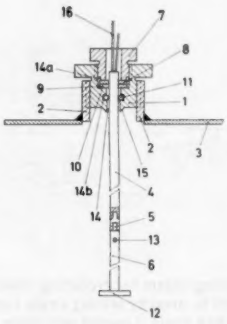
U.S. Cl. 73—343 R **19 Claims**

1. A device for securing a temperature sensor to a vessel wall, wherein the temperature sensor projects through an opening in the wall into the vessel to be surrounded and directly contacted by a medium contained in the vessel, comprising in combination:

a. holding means supported by said vessel wall for positioning and carrying said temperature sensor in an operative position thereof;

b. sealing means disposed in said holding means for surrounding and engaging said temperature sensor in the operative position of the latter to provide a fluid tight seal between the inside and the outside of said vessel, said temperature sensor and said sealing means being arranged for a removal of said temperature sensor from its said operative position by sliding through and out of said sealing means;

c. a plug member secured to and carried by said temperature sensor, said plug member being in an inoperative position within said vessel spaced from said sealing means



as long as said temperature sensor is in its operative position, said plug member being arranged for movement into an operative position by said temperature sensor upon withdrawal of the latter from said sealing means, at least one part of said sealing means surrounding and engaging said plug member in the operative position of the latter to provide a fluid tight seal between the inside and the outside of said vessel; and

d. disconnectable means for releasably securing said temperature sensor to said plug member, whereby said temperature sensor is separable from said plug member for entirely disconnecting said temperature sensor from said vessel while leaving said plug member in its operative position.

3,845,662

METHOD OF AND MEANS FOR DETERMINING THE THRESHOLD OF SURFACE TEMPERATURES OF HEATED ELEMENTS OF MACHINES, ARTICLES AND OTHER EQUIPMENT

Ninel Leonidovna Surgina, ulitsa Bolotnaya, 11, kv. 77, Leningrad; Ljudmila Ivanovna Gurevich, ploschad Lenina, 8/8, kv. 22, Leningrad; Larisa Nikolaevna Yanchenko, naberezhnaya reki Karpovki, 21, kv. 8, Leningrad; Tamara Alexandrovna Bei, ulitsaltd Shmidta, 8, kv. 29, Gatchina, and Valentin Nikolaevich Baikov, V.O. Bolshoi prospekt, 33, kv. 10, Leningrad, all of U.S.S.R.

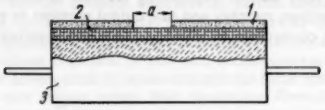
Filed Mar. 24, 1970, Ser. No. 22,401

Int. Cl. G01k 11/06

U.S. Cl. 73—358 **4 Claims**

1. A method for determining the threshold of the surface temperature of an object which comprises applying to the surface of the object a thermosensitive coating composition consisting essentially of a 15–25 percent suspension of stearic acid and iron stearate in alcohol, taken in the proportion of 1:1, said composition capable of melting when heated to

68°-72° C. as a result of which the color of the object upon which said coating is applied appears, and the appearance of



this color is indicative that the surface of said object has attained a temperature not lower than 68°-72° C.

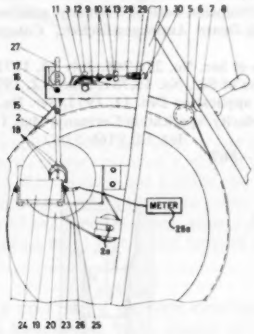
ERRATUM

For Class 73—359 see:
Patent No. 3,845,706

3,845,663
BICYCLE EXERCISER WITH WORK INDICATOR STRUCTURE

Folke Ivar Blomberg, Lidingo, and Marten Engerstam, Huddinge, both of Sweden, assignors to Monark-Crescent AB, Varberg, Sweden

Filed Nov. 6, 1972, Ser. No. 303,948
Claims priority, application Sweden, Nov. 11, 1971, 14411/71
Int. Cl. G01l 5/02
U.S. Cl. 73—379 **4 Claims**

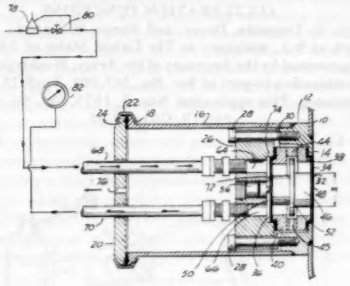


1. A bicycle exerciser or ergometer comprising an input disc-shaped member rotated by pedaling, an output rotatable cylindrical member, ball means disposed between and in frictional contact with said disc-shaped member and said cylindrical member, said cylindrical member being parallel to the surface of said disc-shaped member which is contacted by said ball means, means for braking the rotation of said disc-shaped member, means responsive to said braking means to move said ball means toward or away from the axis of rotation of said disc-shaped member while maintaining said ball means in frictional contact with said disc-shaped member and with said cylindrical member to rotate said cylindrical member, and means responsive to rotation of said cylindrical member to indicate the work performed to rotate said disc-shaped member against the operation of said braking means, said moving means comprising a pendulum arm mounted for vertical swinging movement about a horizontal axis, means responsive to said braking means to swing said pendulum arm, said pendulum arm having claws at the lower end thereof clasping said ball means but leaving said ball means free to rotate.

3,845,664
PRESSURE TRANSDUCER

Joseph A. Perry, Jr., 1815 Eleanor Ave., Saint Paul, Minn. 55116

Filed Dec. 26, 1972, Ser. No. 318,249
Int. Cl. G01l 7/08
U.S. Cl. 73—406 **3 Claims**



1. A pressure transducer for measuring the pressure of a fluid product confined in a receptacle such as a tank, pipe, or the like, said transducer comprising a mounting member for affixing the transducer to said receptacle, said member having a circular opening therein to provide for contact between the product in said receptacle and the transducer, a main body member removably affixed to said mounting member and defining a space therebetween, a pressure range capsule positioned in said space and removably held in place when said main body member is affixed to said mounting member, said capsule being replaceable by first removing said main body member from said mounting member, said capsule including a first thin, flexible and stretchable diaphragm having a first side exposed to said fluid product and against which first side the pressure of said fluid product is exerted, said capsule having a first annular projection thereon defining an opening over which said first diaphragm is stretched, the difference between the diameter of the circular opening in said mounting member and the outer diameter of said annular projection being less than the thickness of said first diaphragm, the said capsule also including a second thin, flexible and stretchable diaphragm spaced from said first diaphragm and having a first side facing the direction opposite and away from the first side of said first diaphragm, said capsule having a second annular projection defining an opening over which said second diaphragm is stretched, a force button positioned between the first and second diaphragms and having a first force area engaged with said first diaphragm and a second force area engaged with said second diaphragm, said first and second force areas of said force button being less than the areas of the respective openings over which said first and second diaphragms are stretched, said force button cooperating with said diaphragms to provide effective areas against which fluid forces can act which effective areas are determined by the size of the force areas of said force button, said second diaphragm sealingly engaging said main body member to define an enclosed space with the first side of said second diaphragm defining a portion of said space, a nozzle in said main body member having an exhaust passageway communicating with said enclosed space with one end of said exhaust passageway terminating in said enclosed space adjacent the first side of said second diaphragm, inlet means extending through said main body member and communicating with said enclosed space for supplying an applied fluid under controlled pressure against the first side of said second diaphragm, outlet means extending through said main body member and communicating with said enclosed space for exhausting the applied fluid from said enclosed space, said second diaphragm being inter-

mittently engageable with said nozzle to close off the exhaust passageway of said nozzle whenever said second diaphragm is in engagement with said nozzle, and said capsule being replaceable in said transducer by removing said main body member from said mounting member.

3,845,665

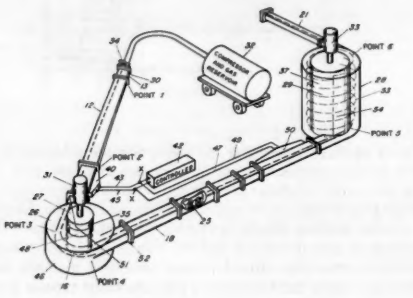
TESTING METHOD AND APPARATUS FOR SIMULATING ACCELERATION FUNCTIONS

Joseph G. Cappetta, Dover, and Steven H. Langdo, Newton, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 247,380, April 25, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,563

Int. Cl. G01m *9/00*

U.S. Cl. 73—432 SD **8 Claims**



1. A testing method for simulating on a test piece acceleration environments characterized by the rapid turn on and off of a plurality of acceleration pulses which comprises:

mounting said test piece in a test fixture so that its normal flight axis is perpendicular to the direction of travel of said fixture;

propelling said fixture along a first linear path from a stationary position to a predetermined speed at the end of said path;

guiding said fixture having said speed into an arcuate path;

maintaining the speed of said test piece constant while said test piece is in said arcuate path so that said test piece has a constant radial acceleration;

guiding said test piece along a second linear path which forms a continuation of said arcuate path;

synchronizing the speed of said test piece with said predetermined speed at the ends of said first and second linear paths;

guiding said test piece into a circular helical path;

maintaining the speed of said test piece constant while said test piece is in said helical path for a number of revolutions depending upon a duration of constant radial acceleration simulation desired.

3,845,666

MULTI-SPEED MOTION TRANSMITTING MECHANISM

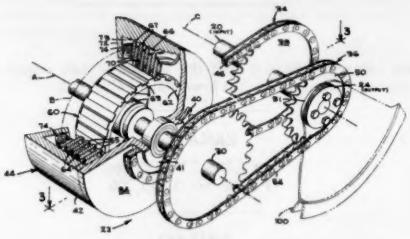
Stellios Antony Avramidis, Greenfield, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 2, 1972, Ser. No. 294,410

Int. Cl. F16h *5/46*; **F16d** *43/08*; **F01p** *7/04*

U.S. Cl. 74—336 **2 Claims**

1. A multi-speed motion transmitting mechanism comprising in combination: an input member mounted on an axis, an output member mounted on said axis, an auxiliary member, a normally engaged centrifugal clutch mounted on said auxiliary member, a first endless flexible motion transmitting member mounted between said input member and said centrifugal clutch to establish a driving connection between said input member and said auxiliary member when the speed of said input member is below a predetermined speed, a second endless flexible motion transmitting member mounted between said auxiliary member and said output member to establish a driving connection between said auxiliary member and said



output member when said input member is below a predetermined speed, and an overrunning clutch on said axis between said input member and said output member to connect said output member directly to said input member for rotation at the same speed when said centrifugal clutch disengages as said input member reaches a predetermined speed.

3,845,667

FABRICATED TUBE CONTROL CAM SHAFTS

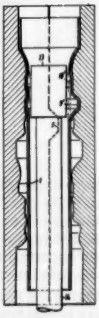
Kurt Honrath, Hoffnungsthal, and Wilhelm Naumann, Cologne Mulheim, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Division of Ser. No. 274,746, July 24, 1972, which is a continuation of Ser. No. 15,781, March 2, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,945

Claims priority, application Germany, Mar. 1, 1969, 1910517

Int. Cl. F16h *53/02*

U.S. Cl. 74—567 **2 Claims**



1. A hollow shaft entirely of uniform thickness with cam means thereon, especially a cam shaft for internal combustion engines, which comprises in combination a tubular member including cam means forming a single integral piece with and pressed out of said tubular member, integral bearing means pressed out of said tubular member having entirely uniform thickness continuously therewith, said cam means having inclined side flanks gradually merging integrally with adjacent areas of said cam means, said bearing means having lateral flanks gradually merging integrally with adjacent areas of said bearing means, said cam means having inclined side flanks gradually merging integrally with adjacent circumferential

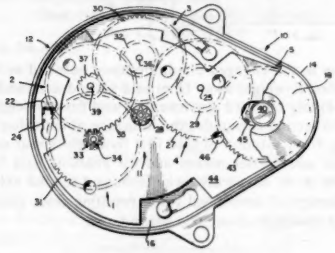
areas of said hollow shaft, said bearing areas having lateral flanks gradually merging integrally with adjacent circumferential areas of said hollow shaft, said cam means being pressed out with entirely uniform thickness as to the hollow shaft subjected to electromagnetic force as internal pressure thereby resulting in external-die-conforming deformation to assure uniform thickness of said cam means compared with the entire hollow shaft to assure strength for force transmittal by said cam means rather than weakening thereof which would occur with thinning in the area of the cam means now precluded from occurring to avoid disadvantages of brittleness and lack of strength.

3,845,668

CLUTCH AND GEAR TRAIN UTILIZING SAME

David W. Underwood, Clayton, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Feb. 20, 1973, Ser. No. 333,620
Int. Cl. F16h *1/02*; **F16d** *11/00*; **G05g** *1/00*
U.S. Cl. 74—412 **16 Claims**



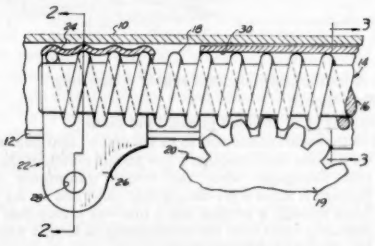
1. A gear train comprising:
a. an input gear,
b. an output, and
c. coupling means coupling said input to said output comprising a series of gears including a series of plastic gears and a series of metal gears, and a plastic gear and a metal gear carried on a common shaft, said plastic gear engaging a gear of said series of plastic gears and said metal gear engaging a metal gear of said series of metal gears.

3,845,669

ROTARY TO LINEAR MOTION CONVERTER

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Oct. 3, 1973, Ser. No. 403,215
Int. Cl. F16h *1/04*, *55/04*
U.S. Cl. 74—422 **10 Claims**



1. A rotary to linear motion converter comprising a relatively stiff but bendable elongated guide member of generally tubular configuration but having a narrow elongated slit extending longitudinally at one side thereof, a flexible generally cylindrical elongated core movable longitudinally within said guide member, said core having an elongated element helically wound on said core and forming a series of teeth along one side thereof and providing with said core a flexible rack constrained to move longitudinally within said guide member to follow bends and curvature thereof, a coupler comprising a plate shaped to extend around and attached to a portion of said flexible rack, and having a laterally extending arm movable longitudinally in and extending beyond said slit to connect to a device to be moved longitudinally of said guide member, said guide member having an internal diameter exceeding the external diameter of said helically wound elongated element by an amount slightly exceeding twice the thickness of said coupler to provide for free movement of said coupler longitudinally within said guide member, and a flexible sleeve surrounding the remainder of said flexible rack, said sleeve having a thickness approximately equal to that of the plate from which the coupler is formed so as to provide for free movement of the flexible rack and sleeve within said guide member and at the same time preventing bending or bowing of the flexible rack relative to said guide member.

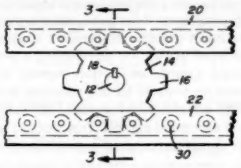
3,845,670

TWIN DRIVE SYSTEM

Leonard W. Grayson, P.O. Box 965, Hamilton, Mont. 59840

Filed Sept. 24, 1973, Ser. No. 399,718
Int. Cl. F16h *55/06*, *1/06*
U.S. Cl. 74—465 **9 Claims**

1. In combination, driven rotary shaft means journaled for rotation about a first axis, a pair of driven rings journaled for rotation about second and third parallel axes, said rings being axially spaced apart and including circumferentially spaced tooth defining rollers journaled therefrom, and drive transmission means including toothed drive wheel means drivingly connecting said rotary shaft means to said driven rings.



3,845,671

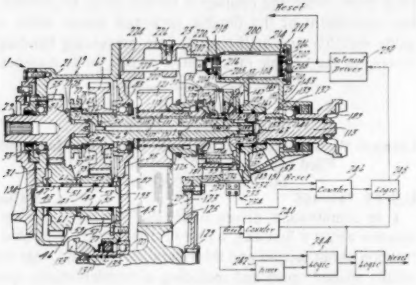
FULL TIME SLIP CONTROLLED FOUR WHEEL DRIVE

Ellis Alvin Sharp, New Orleans, La., and Courtney F. Dolan, Syracuse, N.Y., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 12, 1973, Ser. No. 331,456
Int. Cl. F16h *1/44*
U.S. Cl. 74—710.5 **4 Claims**

1. In a transfer case for power drive systems having a housing, an input shaft, a rear wheel output shaft and a front wheel output shaft rotatably mounted in said housing, a differential carrier, means connecting said input shaft to said differential carrier in a driving relationship, a pinion carried by said differential carrier, first and second side gears in mesh with said pinion on opposite sides thereof to permit rotation of said side gears at different speeds, said means for connecting said input shaft to said differential carrier includes a first drive gear connected to said input shaft, a gear cluster having a second drive gear in constant mesh with said first drive gear and a third drive gear, a fourth drive gear, an intermediate shaft mounting said fourth drive gear for rotation relative thereto,

said third drive gear being in constant mesh with said fourth drive gear, means connecting said intermediate shaft to said differential carrier, clutch means movable to three positions in one of which said first drive gear is coupled directly to said intermediate shaft, in a second of which said fourth drive gear is coupled to said intermediate shaft and in a third of which said input shaft is not drivingly connected to said intermediate shaft, bearing means rotatably supporting said input shaft in said intermediate shaft, and lubricating means on said cluster gear for supplying lubricant to said bearing means when said clutch means is in said second and third positions, means drivingly connecting said first side gear to said front wheel output shaft, said second side gear being connected to said rear wheel output shaft, locking means drivingly connected to one of said side gears adapted to be moved between a first position out of engagement with said differential carrier and in which said differential carrier may rotate relative to said side gears and a second position in engagement with said differential carrier for locking it to said one side gear for



locking said differential carrier, pinions and side gears together, an input sensor coupled to said input shaft and responsive to the rotation thereof for generating a plurality of electrical signals, an input counter responsive to said electrical signals from said input sensor for developing a sampling signal at a predetermined count, an output sensor coupled to said output shaft and responsive to the rotation thereof for generating a plurality of electrical signals, an output counter responsive to said electrical signals from output sensor for developing a range signal between a pair of predetermined count values, a logic comparison network comprising a plurality of interconnected NAND gates for comparing said sampling signal and said range signal and generating a control signal when said sampling signal occurs in the absence of said range signal, and a solenoid connected to said locking means and responsive to said control signal to move said locking means to said second position.

3,845,672

DIFFERENTIAL DRIVE MECHANISM

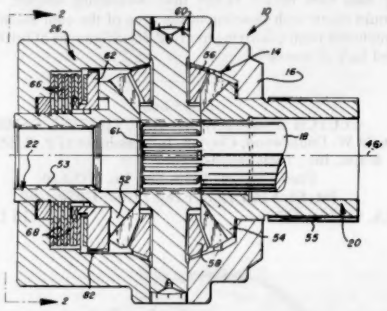
Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 8, 1973, Ser. No. 413,936

Int. Cl. F16d *43/08*; F16h *1/44*

U.S. Cl. 74—711 **19 Claims**

1. A drive mechanism for interconnecting rotatable driving and driven members, said drive mechanism comprising gear means for transmitting drive forces between the driving and driven members and for enabling relative rotation to occur between the driving and driven members, rotatable carrier means connected with said gear means, said carrier means being rotatable about a first axis during the transmission of drive forces between the driving and driven members, clutch means operable between an engaged condition in which said clutch means is effective to retard relative rotation between said driving and driven members and a disengaged condition, and actuator means for effecting operation of said clutch means from the disengaged condition to the engaged condition in response to a predetermined rate of relative rotation between the driving and driven members, said actuator means being rotatable with said carrier means about said first axis and including a rotatable first flyweight, drive means for rotating said first flyweight about a second axis at a speed which varies as a function of variations in the speed of relative rotation between the driving and driven members, means for effecting operation of said clutch means from the disengaged



condition to the engaged condition upon outward movement of said first flyweight away from said second axis, and means for preventing outward movement of said first flyweight away from said second axis under the influence of centrifugal force resulting from rotation of said first flyweight about said first axis with said carrier means and for enabling said first flyweight to move outwardly away from said second axis under the influence of centrifugal force resulting from rotation of said first flyweight about said second axis.

3,845,673

NUT RUNNER WITH PRESSURE MEANS TO HOLD TORQUE CLUTCH MEMBER DISENGAGED

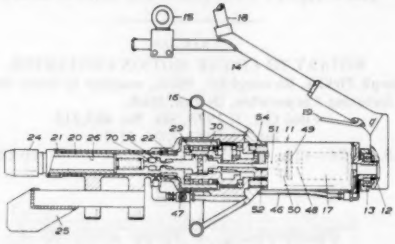
Karl Gosta Karden, Nacka; Sven Peter Johas Westerberg, Saltsjo-Boo, and Klas Johan Astrom, Danderyd, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 29, 1973, Ser. No. 346,109

Claims priority, application Sweden, Apr. 4, 1972, 4308/72

Int. Cl. F16h *3/74*; F16d *43/286*; B25b *23/14*

U.S. Cl. 74—751 **11 Claims**



1. A torque controlled nut runner comprising:

a fluid motor;

a driving shaft coupled to said fluid motor;

an output shaft connected to be rotated by said fluid motor on the one hand through a low torque clutch of the kind that disengages when the torque transmitted therethrough reaches a pre-determined value and on the other hand through a gearing and a one-way clutch that automatically takes over the transmission of torque when the low torque clutch disengages;

said low torque clutch including a driving clutch member connected to co-rotate with said driving shaft and a driven clutch member connected to co-rotate with said output shaft, one of said clutch members being axially

movable relative to its associated shaft between a position in which it is engaged with the other of said clutch members and s disengaged position;

a cylinder formed within the shaft that is associated with said movable clutch member;

a piston axially movably mounted within said shaft cylinder and defining a cylinder chamber with said cylinder, said piston being coupled to said movable clutch member so as to positively hold said movable clutch member disengaged when said cylinder chamber is pressurized; and

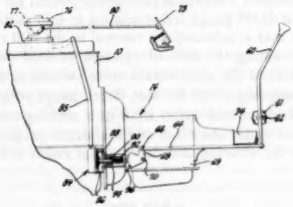
means coupled to said cylinder chamber for pressurizing said cylinder chamber in response to a disengaging movement of said movable clutch member in response to the torque reaching said pre-determined value.

3,845,674

TRANSMISSION CONTROLS FOR LOW TORQUE SHIFTING

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detriot, Mich.

Filed Nov. 24, 1972, Ser. No. 309,140
Int. Cl. F16h *57/06*
U.S. Cl. 74—878 **3 Claims**



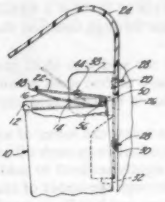
1. In combination an internal combustion engine, a carburetor, said carburetor having throttle valve means movable between closed and wide open valve positions to control the output torque of said engine by controlling the fuel air mixture fed to said engine, a variable vacuum source provided by said engine controlled by said throttle valve means, control means for said throttle valve means movable between first and second positions corresponding respectively to the closed and wide open positions of said throttle valve means, a change speed transmission, torque transmitting fluid unit means operatively connecting said engine to said transmission for continuously transmitting engine torque to said engine for all positions of said throttle valve means, manually operated shift lever means operatively connected to said transmission, pivot means mounting said lever means for turning movement to different predetermined positions to change the speed ratios of said transmission, a transmission selector detent plate, means operatively connecting said detent plate to said shift lever means, shiftable locking plunger means supported adjacent to said detent plate for engaging said detent plate, spring means for urging said locking plunger means into locking engagement with said detent plate to prevent movement of said detent plate and said shift lever means, and pneumatic diaphragm means directly and continuously operatively connected to said vacuum source and directly connected to said locking plunger means for shifting said locking plunger means from locking engagement with said detent plate in response to movement of said throttle valve control means to said first position corresponding to the closed position of said throttle valve to permit said shift lever means to be subsequently moved to one of said predetermined positions to change the speed ratio of said transmission.

3,845,675

TAB TOP CAN OPENER

Wallace H. Cook, 5279 Carrigan Rd., North Street, Mich. 48049

Filed Nov. 14, 1973, Ser. No. 415,664
Int. Cl. B67b *7/36*
U.S. Cl. 81—3.3 R **9 Claims**



1. A device for opening a tab container having a tab which has a self-contained lifting ring, said device comprising:

a base;

means on said base for positioning the tab container vertically along its longitudinal axis;

a movable member;

means on said base for pivotably supporting said movable member;

means on said movable member for intercepting the self-contained lifting ring of the tab;

means on said movable member for engaging the top of the tab container on the opposite side of the tab container top from the self-contained lifting ring; and

means on said movable member for rotating said movable member about an axis transverse to the longitudinal axis of the positioned tab container whereby when said movable member is rotated, the self-contained lifting ring of the tab is pushed up while simultaneously the tab container is pushed down and the tab is disengaged from the tab container.

3,845,676

DEVICE FOR CUTTING OVALS IN MATS OR GLASS SHEETS

Donald Cameron Pierce, 59 Reposa Vista, Novato, Calif. 94947

Filed June 5, 1973, Ser. No. 367,131
Int. Cl. B23b *41/04*
U.S. Cl. 82—1.3 **17 Claims**

1. A device for cutting ovals or circles in sheet material, including in combination:

a baseboard,

a separate base plate adjacent to a first end of said baseboard,

hold-down means swivel mounted to said base plate and having a swivel-mounted hold-down pad,

a tee bar having a scaled flat shank portion slidably mounted centrally to said base plate for movement over said baseboard toward a second end thereof and having a crossbar with a center index line,

upright frame support means rigidly secured to said said base plate,

a horizontal frame having parallel side members and parallel cross members,

first horizontal shaft means rigidly secured to said side members and extending across them,

second horizontal shaft means rigidly secured to said cross members and bridging them in a direction perpendicular to a vertical plane through said first shaft means and at a different level,

a first slide block for said first shaft means and a second slide block for said second shaft means,

an upper bar holder in between said upper and lower slide blocks,

a lower bar holder below the lower of said slide blocks,

two vertical shafts offset from each other, a first said vertical shaft being rigidly secured to said upper bar holder and journaled through the upper of said slide blocks and having a lever arm and handle secured to its upper end, a second said vertical shaft being rigidly secured to both said slide blocks and rotatably journaled through said lower slide block,

a horizontal cutter holder bar mounted slidably in said lower bar holder and having means for setting the minor diameter of the oval to be cut and having cutting means, and

a horizontal eccentricity-setting bar mounted slidably in said upper bar holder and having means for setting the eccentricity, i.e., the amount by which the major diameter of the oval exceeds the minor diameter.

3,845,677

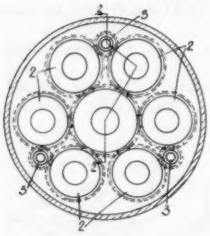
MULTI-SPINDLE AUTOMATIC LATHES

Harold James Gilbert, 121 Lavender Ave., Coventry, England

Filed Aug. 5, 1970, Ser. No. 61,171

Int. Cl. B23b *19/02*

U.S. Cl. 82—29 R **3 Claims**



1. A multi-spindle automatic lathe comprising a housing, a driving shaft, a spindle drum indexable in said housing, a plurality of work spindles carried by the spindle drum, and a plurality of layshafts, the axes of said layshafts being radially offset with respect to the axis of said driving shaft, first and second gears mounted on each work spindle for rotation relative thereto, first and second gears mounted on each layshaft for rotation therewith, said first and second layshaft gears meshing with said first and second work spindle gears, a single driving gear carried by the driving shaft meshing with said first gears of the work spindle, and clutch means mounted on each work spindle for selective engagement with said first and second gears on the work spindle for drivingly connecting said driving shaft to the work spindle to effect rotation of the work spindle at one of the alternative work spindle speeds irrespective of the speed of the other work spindles.

3,845,678

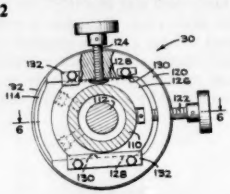
UNWIND STAND

Ralph H. Eggert, Watergate Condominium No. 224, Kings Hyw., Rt. 41, Maple Shade, N.J., and Quentin T. Woods, 952 Yarmouth, San Jose, Calif.

Division of Ser. No. 149,302, June 2, 1971, abandoned. This application June 18, 1973, Ser. No. 371,205

Int. Cl. B23b *5/14*

U.S. Cl. 82—92 **4 Claims**



1. Apparatus for severing a selected portion of a full mill roll from the remainder of the roll, said apparatus being of the type comprising an unwind stand for rotatably supporting the roll, an arm pivoted on said unwind stand and having a tubular hub, a shaft rotatable in said hub, a disc like cutter wheel mounted on one end of said shaft for severing said selected roll portion, and a depth gauge roller mounted on said hub on an axis of rotation that is parallel to that of said cutter wheel; the improvement wherein means are provided for adjustably shifting said depth gauge roller relative to said cutter wheel in a direction that is substantially normal to the mill roll surface while maintaining the axis of rotation of said depth gauge roller parallel to the axis of said cutter wheel, said adjusting means comprising a hub for said depth gauge roller that surrounds and clears said cutter shaft hub, shifting means acting between said cutter shaft hub and said depth gauge roller hub, and means for securing said depth gauge roller in its adjusted position.

3,845,679

APPARATUS FOR CUTTING VENEER OR OTHER STRIP MATERIAL

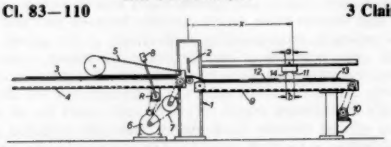
Bernhard Rhotert, Hagen, Germany, assignor to Keller Spezialtechnik GmbH, Laggenbeck, Germany

Filed Oct. 9, 1973, Ser. No. 404,797

Claims priority, application Germany, Oct. 9, 1972, 2249467

Int. Cl. B27l *5/08*

U.S. Cl. 83—110 **3 Claims**



1. In apparatus for cutting strip materal,

a material infeed conveyor,

cutter means downstream of the infeed conveyor,

a removal conveyor downstream of the cutter means, the removal conveyor being drivable at a higher speed than the infeed conveyor, and

control means operative to selectively actuate the cutter means, the cutter means also being actuable independently of the control means, said control means comprising

first and second sensor means spaced along the path of movement of the removal conveyor and operative to sense material moving along the removal conveyor, and timer means responsive to the sensor means to determine the speed of movement of the material moving along the removal conveyor such that the cutter means is actuated if the said speed is less than a predetermined speed.

3,845,680

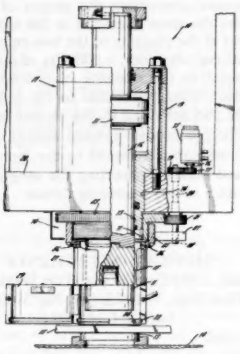
HYDRAULIC PUNCH PRESS WITH MECHANISM FOR ADJUSTING STRIPPER

William B. Scott, Steward, and Roger V. Sawvell, New Milford, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Division of Ser. No. 274,391, July 24, 1972, Pat. No. 3,805,658. This application Feb. 13, 1974, Ser. No. 442,089

Int. Cl. B26d 7/06; B27f 1/02

U.S. Cl. 83—146 3 Claims



1. A punch press having a vertically reciprocable punch adapted to coact with an underlying die to punch a hole in an intervening workpiece, said press comprising a generally horizontal support plate, a cylinder mounted on the upper side of said support plate and having a depending nose projecting downwardly through a hole in the support plate, a piston slidable upwardly and downwardly within said cylinder, a ram projecting downwardly from said piston and through said nose and guided for up and down sliding by said nose, said punch being carried on the lower end of said ram, a stripper plate overlying said die and formed with a hole through which said punch reciprocates, and means mounting said stripper plate for vertical adjustment toward and away from said die, said means comprising a first ring having internal threads of one hand threaded onto said nose whereby the ring moves vertically on the nose in response to being rotated, a second ring connected to said stripper plate and having internal threads of the opposite hand threaded onto said first ring, and mechanism extending between said support plate and said second ring for preventing rotation of the second ring while allowing the latter to move vertically in the same direction as said first ring when the first ring is rotated.

3,845,681

GRANULATOR FOR GRANULATING PLASTIC STRANDS

Rudolf Paul Fritsch, Stuttgart, Germany, assignor to Firma C. F. Scheer & Cie, Baden-Wurttemberg, Germany

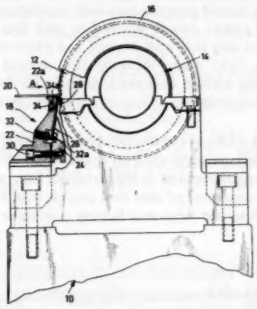
Filed Apr. 17, 1973, Ser. No. 351,865

Claims priority, application Germany, Apr. 22, 1972, 2219784

Int. Cl. B23d 23/00; B29b 1/02

U.S. Cl. 83—356.3 6 Claims

1. A granulator for granulating plastic strands comprising a knife cylinder having a plurality of axially extending closely spaced knife edges disposed around the periphery of the cylinder and generally saw-toothed in radial section, a support for a plurality of incoming plastic strands to be granulated, said support including a flexible metal strip and a retaining means for adjustably holding said metal strip disposed in a plane generally tangential to an arc defined by said knife edges and with the upper edge of the metal strip disposed in coacting relationship with successive knife edges to successively shear the ends of the incoming plastic strands, said retaining means including means for deforming individual sections of the upper portion of the metal strip in a direction radially of the



knife cylinder to compensate for longitudinally uneven wear of the knife edges.

3,845,682

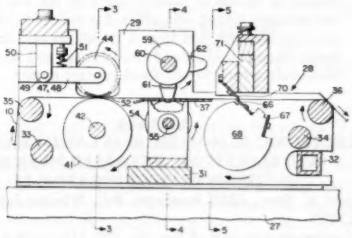
WEB PERFORATING APPARATUS

William Junior Willhite, Green Township, Hamilton County, and Herbert Eugene Strube, Colerain Twp., Hamilton County, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 363,937, May 25, 1973. This application Apr. 19, 1974, Ser. No. 462,280

Int. Cl. B26d 3/00

U.S. Cl. 83—431 4 Claims



1. A cammed slitter mechanism for forming a longitudinal slit in a moving web comprising:

a. a deadplate for supporting said web during movement thereof, said deadplate having at least one opening therein,

b. slitting means mounted beneath said opening in said deadplate, and

c. means for periodically pushing said web through said opening and causing it to momentarily contact said slitting means to form an elongated longitudinal slit in said web.

3,845,683

KEYBOARD FOR ELECTRONIC MUSICAL INSTRUMENT

Alfred H. Lehmann, Clemson, S.C., assignor to Pratt-Read Corporation, Ivoryton, Conn.

Continuation of Ser. No. 301,895, Oct. 30, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 396,057

Int. Cl. G10h 1/00

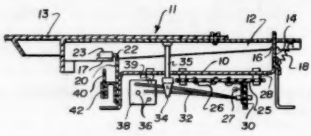
U.S. Cl. 84—1.01 12 Claims

1. In a keyboard for a musical instrument including a frame structure and a plurality of elongated keys pivotally mounted on said frame structure, the combination including:

a first circuit board secured to the frame structure and extending generally parallel to the plane of the keys, said first circuit board having first and second ends and including circuit components and conductors thereon,

a second circuit board secured to said first circuit board adjacent said first end thereof and extending at substantially a right angle thereto, said second circuit board including circuit components thereon and conductors thereon connected to said conductors on said first circuit board,

elongated resilient conductor means individually associated with the keys supported on said second circuit board and extending therefrom in the direction from said first end to said second end of said first circuit board and generally parallel to the keys and having a portion extending beyond said second end of said first circuit board, said resilient conductor means being connected to said conductors on said second circuit board,



actuator means individually secured to the keys and extending perpendicular therefrom, said actuator means being coupled to said extending portion of said resilient conductor means for moving the same in response to movement of the keys, and

fixed contact means secured to the frame structure and positioned to be selectively engaged by said resilient conductor means in accordance with the movement of said actuator means, whereby actuation of one of the keys provides a connection from a circuit on said first circuit board through said second circuit board and said resilient conductor means to said fixed contact means.

3,845,684

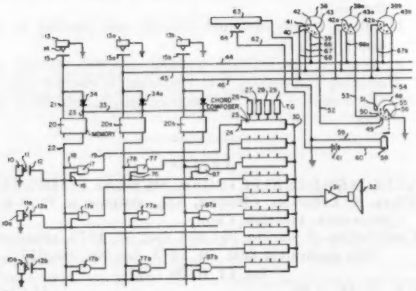
ELECTRONIC AUTOMATIC RESET SWITCH CIRCUIT AND ELECTRONIC KEYBOARD MUSICAL INSTRUMENT INCORPORATING IT

Ernest A. Herr, 1850 Rominger Rd., Winston-Salem, N.C. 27107

Continuation-in-part of Ser. No. 349,233, April 9, 1973, abandoned. This application Nov. 14, 1973, Ser. No. 415,732

Int. Cl. G10h *1/00, 5/00*

U.S. Cl. 84—1.01 **11 Claims**



1. Apparatus comprising a plurality of reset-set flip-flops, an on-off switch connected between ground and the set input of each flip-flop, a reset bus bar connecting the reset inputs of all the flip-flops, and a diode connected between the set and reset inputs of each flip-flop with its positive terminal connected to the reset input, the on-off switch being a key operated chord switch, a plurality of key-operated melody note on-off switches, a plurality of two-input gates equal to the product of the plurality of melody notes by the plurality of chords, each gate being adjusted to produce a positive output when both input signals are of the same character, means connecting each melody note switch between a signal source and one input of a plurality of the two-input gates equal to the number of chords, means connecting the output of each reset-set flip-flop having the same character as the signal source with the other input of the plurality of the two-input gates equal to the number of melody notes, a plurality of multi-input chord composers equal to the plurality of two-input gates, each chord composer being connected to the output of a single two-input gate and activated by the output from that gate to connect the chord composer's inputs with its output, a plurality of tone generators connected to the inputs of the chord composers, and means connecting the outputs of the chord composers with a sound-producing device.

3,845,685

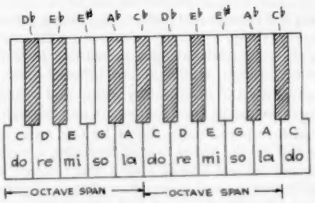
MUSICAL INSTRUMENTS

Donald K. Coles, 2505 Capitol Ave., Fort Wayne, Ind. 46806

Filed Sept. 7, 1973, Ser. No. 395,002

Int. Cl. G10c *3/12*

U.S. Cl. 84—451 **11 Claims**



1. A musical instrument having a plurality of tone generators which produce a sequence of pitches proceeding from low to high in an approximately equitempered scale, wherein the improvement comprises:

a keyboard having five lower digitals per octave span and not more than five upper digitals per octave span, each of said upper digitals being disposed between two adjacent ones of said lower digitals,

said lower digitals being consecutively numbered from left to right, starting with lower digital number one on the left of said keyboard, said lower digital number one controlling a predetermined lowest pitch generated by one of said tone generators,

each of said lower digitals with a number *N* greater than five controlling a pitch one octave higher than the pitch controlled by that lower digital which has a number equal to *N*-5.

3,845,686

INTONATION GUIDE FOR PLAYER OF STRING INSTRUMENT

Andrew D. Salvo, 10 Gloria Pl., East Haven, Conn. 06512

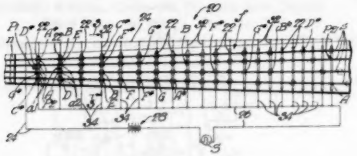
Filed Aug. 1, 1973, Ser. No. 384,587

Int. Cl. G10b *15/00*

U.S. Cl. 84—485 **8 Claims**

1. A pitch intonation guide for a player of a string instrument with a fingerboard and a nut thereon, for playing on the

strings groups of notes in associated series of finger positions on the fingerboard at different spacing, respectively, from the nut, providing first and second signal means within signal perception by the player of the instrument; first and second electrical circuitry for the respective first and second signal means, including a plurality of normally open first and second switches of which each first and each second switch is closable to close the respective first and second circuitry for signal emission from the respective first and second signal means, and first and second tabs associated with said first and second



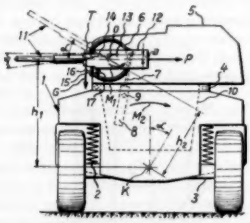
switches, respectively, with each tab being mounted on the fingerboard underneath the strings thereon and operative to close the associated switch by the player's finger pressure against said tab in fingering any of said strings, said tabs being arranged in pairs, of which each pair provides a first and second tab at one of said series of finger positions and so spaced from each other that both tabs are within pressure reach of the player's finger for playing any note of the associated group at the correct pitch, but only either one of the tabs is within pressure reach of the player's finger for playing the same note at off-pitch.

3,845,687

APPARATUS FOR A FIRING WEAPON MOUNTED AT A LIGHT VEHICLE

Vladimir Waeber, Geneve, Switzerland, assignor to Werkzeug-Maschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Aug. 10, 1972, Ser. No. 279,705
Claims priority, application Switzerland, Aug. 20, 1971, 012256/71
Int. Cl. F41f *23/06*
U.S. Cl. 89—37 K **3 Claims**



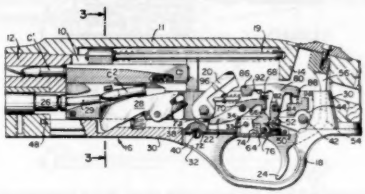
1. A mounting apparatus for a weapon for mounting the same at a light vehicle, said weapon having a weapon axis and said vehicle having a tilt axis, said vehicle being pivotable about said tilt axis due to the recoil force of the weapon, said weapon having a cradle, an elevating mechanism rotatable about an axis of rotation, said weapon being mounted via said cradle at said elevating mechanism, pivot pin means for the cradle about which is pivotably mounted the cradle at said elevating mechanism, said pivot pin means being arranged above the weapon axis, said weapon being pivotable about said pivot pin means due to its recoil force and opposite the tilting motion of the vehicle, a prestressed spring bearing at one end at the cradle and at the other end at the elevating mechanism, said elevating mechanism being provided with a stop against which there is pressed the cradle under the action of the force of said pre-stressed spring.

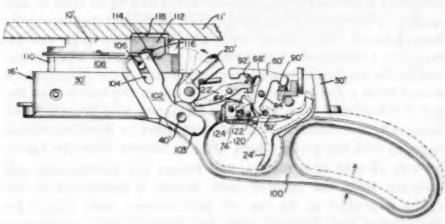
3,845,688

SEAR-DISCONNECTOR FOR FIREARMS

Louis W. Seecamp, New Haven, Conn., assignor to O.F. Mossberg & Sons, Inc., North Haven, Conn.

Continuation of Ser. No. 220,063, Jan. 24, 1972, abandoned.
This application Aug. 14, 1973, Ser. No. 388,195
Int. Cl. F41d *11/02*
U.S. Cl. 89—146 **9 Claims**





1. In a firing mechanism for a repeating firearm having a frame, a breech-bolt supported for reciprocal movement into and out of a breech-closing position, a spring-loaded firing member adapted and arranged to be moved into and beyond a cocked position by said breech-bolt on retraction thereof, a sear resiliently urged into cocking engagement with said firing member, and a trigger for moving said sear out of such cocking engagement, a sear-disconnecting device comprising in combination therewith

a disconnector mounted on said trigger for movement therewith upon retraction and release of said trigger and for movement with respect to said trigger between a sear-actuating position and an inoperative position in which said sear is free to move into its cocking position independently of the action of said trigger,

said disconnector in its sear-actuating position being disposable so as to move said sear out of cocking engagement upon retraction of said trigger in order to discharge the firearm,

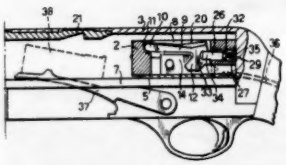
means for resiliently urging said disconnector into its sear-actuating position, and

a disconnector-actuator mounted on said frame for movement into and out of an actuating position and having a disconnector-engaging surface for positioning said disconnector in its inoperative position when said disconnector-actuator is in its actuating position and a bolt-actuated portion disposed for engagement with and movement by said firing member into said actuating position when said firing member is moved beyond its cocked position, thereby preventing inadvertent discharge of the firearm.

3,845,689
BREECH-BLOCK FOR AUTOMATIC GUNS, MORE PARTICULARLY AUTOMATIC SHOTGUNS

Ernesto Zanoni, Brescia, Italy, assignor to S.p.A. Luigi Franchi, Brescia, Italy

Filed May 21, 1973, Ser. No. 362,125
Claims priority, application Italy, May 19, 1972, 024572/70
Int. Cl. F41d 3/00
U.S. Cl. 89—181 1 Claim



1. A breech-block for automatic guns, more particularly for automatic shotguns, comprising a substantially rectangular body disposed with the larger axis in alignment with the axis of the barrel of the gun, a seating in said body, a pivoted lock mounted in an oscillating manner about one of its ends in said seating, a carriage for supporting said body and displacing the breech-block, cam means integral with the carriage and removably connected to the pivoted lock in said seating, intended for engagement and disengagement of the pivoted lock in and from a cavity provided in the top of the receiver of the gun in which said breech-block is displaced, said breech-block being characterized in that it comprises a member which engages with the pivoted lock after its release from the cavity by way of said cam means, and means for disengaging said member from the pivoted lock before it reengages in the cavity provided in the top of the receiver, said means for disengaging said member from the pivoted lock comprises a raised part laterally defined by the hollow cylinder and projecting outside the groove and the side of the body facing towards the ejector, said projecting part interfering with the ejector during the return course of the breech-block and determining, in contrast to the spring means, the disengagement of the cylinder from the notch of the pivoted lock.

3,845,690
DIGITAL FLUIDIC CIRCUIT WITH ADJUSTABLE TIME DELAY MEANS FOR OUTPUT CONTROL

William H. Ziegler, Waterford, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 16, 1973, Ser. No. 341,801
Int. Cl. F15b 21/02
U.S. Cl. 91—35 7 Claims

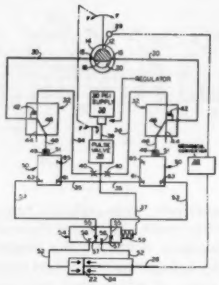
1. In a mechanical system having first movable means responsive to an external force thereon, second movable means initially disposed in zero relationship with said first means, and piston means responsive to the movement of said first means for actuating said second means to restore said zero relationship thereof with said first means, the improvement of a fluidic digital feedback circuit for actuating said piston means, comprising,

a pulse valve responsive to the initial movement of said first means for supplying an output flow of fluid over a predetermined interval at least equal to the period of time required to restore said zero relationship between said first and second means,

a pair of sensing orifices spaced in said second means in position to be blocked by said first means against the flow of fluid therethrough when said first and second means are in said zero relationship, said orifices being also positioned so that movement of said first means out of said zero relationship with said second means unblocks one of said orifices for the flow of fluid therethrough while continuing to block the other of said orifices,

a pair of interface valves in fluid communication with said pulse valve and in respective fluid communication with the opposite ends of said piston means,

a pair of OR/NOR logic elements disposed in respective



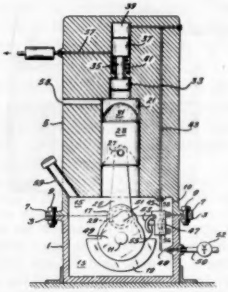
fluid communication with said pulse valve, said sensing orifices and said interface valves, and

means in each of said logic elements responsive to the unblocking of the one of said sensing orifices in communication therewith for actuating said corresponding interface valve to exhaust the fluid supplied to one end of said piston means while the other of said interface valves continues to supply fluid from said pulse valve against the other end of said piston means to create a differential pressure thereon for imparting linear movement thereto.

3,845,691
ENGINE WITH RESILIENT PISTON

Larry J. Howard, 5367 Gilson, St. Louis, Mo. 63116

Filed May 15, 1973, Ser. No. 360,413
Int. Cl. F16j 1/10; F01l 31/00, 21/02
U.S. Cl. 91—325 6 Claims



1. An engine comprising guide means, a crankshaft extending transversely of said guide means, a piston mounted for movement lengthwise of said guide means, a rod connecting said piston and said crankshaft, and an impactor having a portion intermittently engageable with an end portion of said piston for initiating axial movement of the latter by engage-

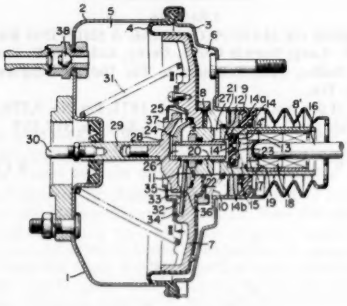
ment therewith, one of said portions being a resilient mass of elastomeric material substantially unconfined transversely of the piston axis whereby movement of said piston as a result of engagement of said impactor and piston is aided by the compression and consequent expansion of the resilient portion in a direction axial of said piston, and means for imparting oscillatory movement to said impactor in a direction axial of said guide means.

3,845,692

VACUUM SUSPENDED TYPE SERVO-MOTOR

Hiroo Takeuchi, Nagano-ken, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Ueda-shi, Nagano-ken, Japan

Filed Mar. 30, 1973, Ser. No. 346,659
Claims priority, application Japan, Apr. 7, 1972, 47-34928
Int. Cl. F15b *9/10*
U.S. Cl. 91—369 B **3 Claims**



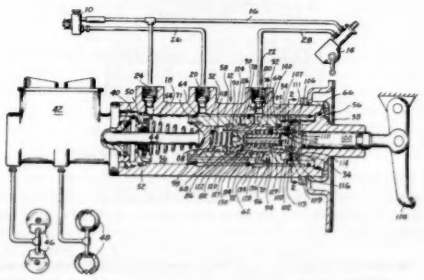
1. A vacuum-suspended type servo-motor comprising: a casing; a movable wall arranged in said casing to divide the interior space thereof into two compartments, including a first power chamber continuously communicating with a source of vacuum and a second power chamber normally communicating with said first power chamber, said movable wall being displaceable by pressure difference between said first and second power chambers; an input member slidably fitted in said movable wall; an output member; reaction means operably connecting said output member with said input member and said movable wall; and control valve means normally holding said second power chamber in communication with said first power chamber and operable upon forward movement of said input member to close off the communication between said first and second power chambers and subsequently to place said second power chamber in communication with the external atmosphere; said reaction means including rocker levers each extending between said input member and said movable wall and held intermediate the ends thereof in engagement with said output member whereby, when said output member is loaded by forward movement of said input member, the load reaction is partially transmitted to said input member through said rocker levers, said control valve means being provided with a valve chamber within said input member and communicating with the external atmosphere, a first valve port formed in said input member and communicating with said valve chamber and said second power chamber, said control valve means comprising a communicating tube having opposite ends, a plurality of support arms radially extending from one end of said communicating tube to mount said tube on said movable wall, said tube being slidably fitted in said input member axially thereof, said communicating tube defining at the other end thereof a second valve port which opens coaxially with said first valve port, said tube communicating at said one end with said first power chamber, and a valve element accommodated in said valve chamber and normally biased toward said first and second valve ports; said output member including an output transmitting flange at the rear end thereof for engagement with said rocker levers intermediate the ends thereof, said rocker levers being each rockably arranged between two adjacent support arms of said communicating tube which prevent circumferential displacement and between said communicating tube and a projection formed on the front side of said movable wall which prevent radial displacement.

3,845,693

POWER BRAKE BOOST MECHANISM WITH PRESSURE REGULATING DEVICE

Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Apr. 23, 1973, Ser. No. 353,825
Int. Cl. F15b *9/10*
U.S. Cl. 91—371 **6 Claims**



1. In a hydraulic power boost mechanism for a vehicle braking system having a housing with a piston reciprocally positioned therein dividing the housing into an exhaust chamber and a pressure chamber, said piston being provided with a longitudinal bore and control valve means in the bore including a spool valve having a released position in which the pressure chamber is communicated to the exhaust chamber and an applied position in which the pressure chamber is connected by a central passage to a hydraulic fluid pressure source for developing a boost pressure in the pressure chamber for driving the piston, the improvement which comprises: a pressure limiting device having a seat in the central passage of the spool valve, and a hollow plunger in the central passage normally unseated from the seat to allow communication with the pressure chamber, said plunger having opposed stepped ends of smaller and larger diameters exposed to the pressure chamber and responsive to the boost pressure in the chamber at a predetermined value for urging the plunger against the seat to inhibit further rise in boost pressure so that the pressure attained in the braking system is held within prescribed limits.

3,845,694

END OF STROKE IMPACT REDUCING MEANS FOR LINEAR FLUID MOTORS

Lawrance F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

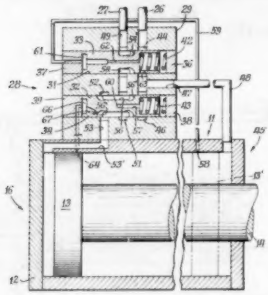
Filed Feb. 15, 1973, Ser. No. 332,702
Int. Cl. F15b *15/22*
U.S. Cl. 91—402 **5 Claims**

1. Mechanism for reducing impact of the piston of a linear fluid motor against the end structure of the cylinder thereof, wherein first and second conduits communicate with first and second ends of said cylinder to transmit pressurized fluid to a

selected one of said ends while transmitting discharge fluid away from the other of said ends, wherein piston movement towards said second end tends to occur at greater velocity than does piston movement towards said first end, comprising:

valve body means situated between said conduits and said cylinder and having a first internal passage for communicating said first conduit with said first end of said cylinder and having a second internal passage for communicating said second conduit with said second end of said cylinder,

a first valve member movable within said valve body means to communicate said first and second passages in response to application of a first predetermined fluid pressure differential to said first valve member to provide for impact reduction through a bypass action as said piston approaches said first end of said cylinder,



means for applying said first predetermined fluid pressure differential to said first valve member only as said piston approaches said first end of said cylinder to bypass driving fluid from said first passage to said second passage of said valve body means,

a second valve member movable within said valve body means in response to a second predetermined fluid pressure differential to communicate said first and second passages while simultaneously restricting fluid discharge from said second end of said cylinder to provide for impact reduction through both a bypass action and a cushioning effect as said piston approaches said second end of said cylinder, and

means for applying said second predetermined fluid pressure differential to said second valve member only as said piston approaches said second end of said cylinder.

3,845,695

METHOD AND APPARATUS FOR MAKING A BAG WITH A SEALED POURING SPOUT

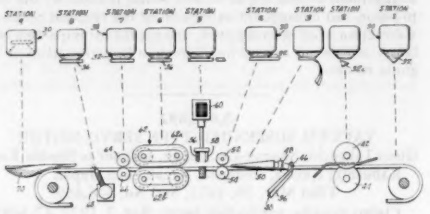
Anthony J. Randazzo, Chalmette, La., assignor to Amstar Corporation, New York, N.Y.

Division of Ser. No. 185,680, Oct. 1, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 390,192

Int. Cl. B31b *1/90*

U.S. Cl. 93—1 TS **12 Claims**

1. In a method of making a bag of flexible material, including the steps of forming closure flaps at an end of the bag to be subsequently folded in overlapping relation and secured together to seal said bag end, the overlapping one of the closure flaps being generally triangular in shape and composed of a plurality of sheets of material, the improvement comprising severing said overlapping closure flap near the apex thereof to provide a pouring spout upon the separating of said sheets of material, said pouring spout communicating with the interior of the bag and having an outer open end formed by said severing through which the contents of the bag may be dispensed, securing a sealing tape to said pouring spout to close off and seal said open spout end, and folding



said closure flaps in overlapping relation and securing them together to seal said bag end.

3,845,696

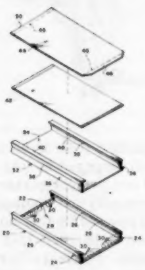
METHOD OF MANUFACTURING A SHIPPING BAG

Donald V. Long; Norwin Cedric Derby, and Peter P. Chorak, all of Dallas, Tex., assignors to The Dalpak Corporation, Dallas, Tex.

Division of Ser. No. 185,708, Oct. 1, 1971, Pat. No. 3,770,189. This application July 9, 1973, Ser. No. 377,317

Int. Cl. B31b *49/04*

U.S. Cl. 93—35 R **9 Claims**



1. A method of forming a bag including the steps of:

forming inwardly projecting gusset folds along the opposite edges of a back wall;

adhesively securing a front wall of longer length than the back wall to the edges of the gusset folds remote from the back wall with the front wall projecting beyond at least one end of the back wall and the gusset folds to form an endwise projecting lip;

adhesively securing the endwise projecting lip of the front wall to the outer surface of the back wall to form a bag having one closed end and one open end; and

folding and securing the corners of the closed end of the bag into the gusset folds.

3,845,697

METHOD OF MAKING AN ENVELOPE FOR A CIGARETTE BLOCK

Otto Niepmann, Gevelsberg, Germany, assignor to Maschinenfabrik Fr. Niepmann & Co., Gevelsberg, Germany

Filed Aug. 21, 1972, Ser. No. 282,611

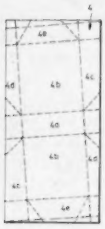
Claims priority, application Germany, Dec. 28, 1971, 2164925

Int. Cl. B31b *1/08*

U.S. Cl. 93—35 SB **1 Claim**

1. A method of making an outer wrapping around a cigarette block in a cigarette wrapping machine using a foil blank

of more narrow width than conventional size to save foil blank material, which includes in combination the steps of: preparing a one piece rectangular foil blank having a longitudinal central portion comprising a bottom section and a front section and a rear section collectively to contain a predetermined number of cigarettes, said rectangular foil also being provided with irregularly tapered sections arranged on opposite sides of said central portion, the lateral section at one side of said central portion decreasing in width from one end each of said foil blank to the opposite end of said foil blank and the lateral section on the other side of said central portion correspond-



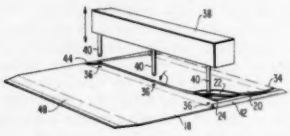
ingly increasing in width from said one end of said foil blank to said opposite end of said foil blank, and inclining said foil blank placed into the cigarette wrapping machine at an inclined position purposely so that the confining longitudinal edges of said central portion which also form the folding lines for said irregularly tapered lateral sections extend substantially parallel to the direction in which the wrapping machine feeds said foil blank though when folding is completed there results a rectangular outer wrapping for the cigarette block having minimum overlap of the irregularly tapered lateral sections.

3,845,698

METHOD OF MAKING AN ENVELOPE CONTAINING A SEPARATE ENCLOSURE SHEET

George L. Scholle, Branford, Conn., assignor to Compucolor, Incorporated, Statford, Conn.

Filed June 28, 1973, Ser. No. 374,438
Int. Cl. B31b *49/04*
U.S. Cl. 93—61 R **4 Claims**



1. A process for producing an envelope containing a separate enclosure sheet from a combined enclosure sheet-integral envelope in which said combined enclosure sheet-integral envelope comprises a first sheet and a second sheet jointed thereto along a first transverse line, the opposite longitudinal edges of said first sheet being positioned inside those of said second sheet, said second sheet having a second transverse line defining top and bottom panels and a third transverse line in said top panel defining an envelope flap thereon, said process comprising;

a. applying fugitive glue means to one of said first and second sheets,

b. folding said first sheet along said first transverse line to secure said first sheet and said second sheet together by said fugitive glue means,

c. separating said first sheet from said second sheet along said first transverse line prior to folding said second sheet along said second transverse line about said first sheet and,

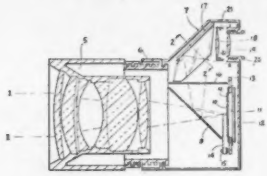
d. folding said second sheet along said second transverse line about said first sheet and sealing the edge portions of said second sheet together to form said second sheet into an envelope containing said first sheet.

3,845,699

COMPACT SINGLE LENS REFLEX VIEWING SYSTEM FOR CAMERAS

Chung Liao Feng, 16 Seven Springs Rd., Radnor, Pa. 19087

Filed May 1, 1972, Ser. No. 249,070
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **4 Claims**



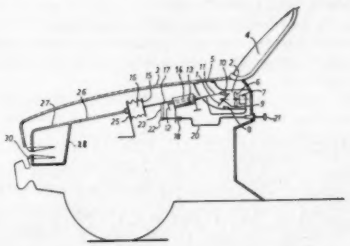
1. A camera with compact viewing system comprising a camera body with objective lens, a one way reflector behind said lens, a shutter curtain with reflecting surface behind said reflector, a 90° corner reflector to receive light reflected by said curtain and first reflector, and an ocular.

3,845,700

VENTILATION SHUTTER CONTROL OF MOTOR VEHICLE

Andre Lefeuvre, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed July 5, 1972, Ser. No. 269,075
Claims priority, application France, Aug. 9, 1971, 71.29045
Int. Cl. B60h *1/12*
U.S. Cl. 98—2 **7 Claims**



1. Automatic control device for the air-intake shutter of a ventilation system for a motor vehicle comprising

a fan driven by an electric motor,

an air-intake shutter,

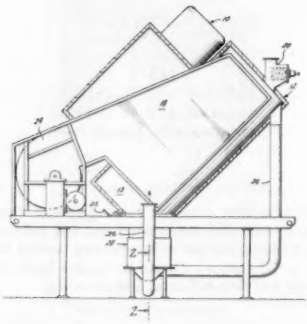
movable electrical control member interposed in the power circuit of said electric motor,

means adapted to engage said shutter with said movable electrical control member to rotate said shutter,

a Venturi choke having its air inlet fed with the relative wind created by the vehicle motion,

a vacuum chamber having a movable end wall,
means communicating said vacuum chamber with the depression zone of said Venturi choke,
rigid means connecting said movable end-wall of said vacuum chamber with said movable electrical control member, and
said movable electrical control member being rigid with a tapped socket engaged by the screw-threaded portion of a control rod adapted, by rotating a control knob associated therewith, to preset the distance between said movable member and said vacuum chamber.

3,845,701
MATERIAL TREATING APPARATUS
Norman H. Sachnik, 6027 Warm Springs, Houston, Tex.
Filed Apr. 11, 1973, Ser. No. 350,182
Int. Cl. A23l *1/18*; **F26b** *17/30*
U.S. Cl. 99—323.5 **13 Claims**



1. A treating apparatus comprising:
a housing with a treating chamber therein,
means for circulating a treating gas through treating chamber,
a plurality of trays within the treating chamber spaced helically along and mounted for rotation about an axis that is inclined from the vertical sufficiently for gravity to cause movement of the material down the face of the tray,
each tray having rims for confining and lifting the material as the tray rotates about the inclined axis,
a transfer means between adjacent trays for transferring material from an upper tray to the outer section of a lower tray,
outlet means on each tray located in the tray section adjacent the axis of rotation for discharging material from each tray onto a lower transfer means,
means for rotating the trays,
material inlet means in the treating chamber located to deposit material on the uppermost tray between the outlet means and the periphery of the uppermost tray, and
means for conducting material from the treating chamber after it has been discharged from the lowermost tray

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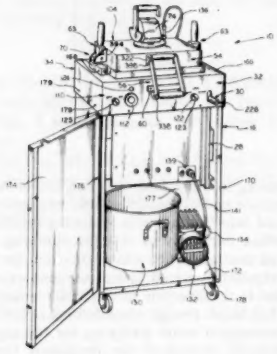
3,845,702
APPARATUS FOR COOKING CHICKEN
Carl P. Mies, Louisville, Ky., assignor to Mies Filter Products, Incorporated, West Bend, Wis.
Division of Ser. No. 24,517, April 1, 1970, abandoned. This application July 17, 1972, Ser. No. 272,180
July 17, 1972, Ser. No. 272,180
Int. Cl. A47j *37/12*
U.S. Cl. 99—408 **4 Claims**

1. A deep fat fryer comprising:
a vessel defining a smoothed walled chamber proportioned to receive cooking oil and chicken serving pieces to be cooked in the approximate ratio of two to one,
a drain opening at the bottom of said vessel,
valve means for opening and closing said drain opening,
a removable cover for closing off the top of said vessel,
means for clamping said cover in closed relation to the vessel for cooking the chicken serving pieces under pressurized conditions,
heater means about said vessel and spaced at a level above the level of the bottom of said vessel for heating cooking oil received in the chamber to a temperature range for cooking chicken serving pieces received in the oil when the oil is in the chamber,
said heater means being exterior of said chamber,
and filter means within said chamber and between the level of said heater means and the level of said vessel bottom

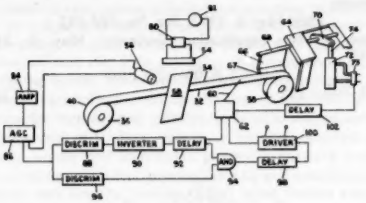


for filtering cooking oil drained from said vessel before it passes through said valve means, and disposed to permit solids in the oil collect on its upper side,
said filter means comprising a filter unit extending across said chamber and including filter paper through which the cooking oil is to pass on opening of said valve means to filter the cooking oil,
and means for applying a differential pressure on the cooking oil when said valve means is opened for inducing cooking oil flow through said filter paper,
said heater means being positioned in the spaced relation relative to said filter means to avoid charring of the solids collecting on the filter means when the oil is heated to said temperature range and yet drive off moisture from said paper to permit said filtering of the oil through said paper on opening of said valve means and application of the differential pressure to the cooking oil.

3,845,703
CONTROLLING ARTICLE TOPPING AND ORIENTATION DETECTING
Robert M. Gillespie, Grand Rapids, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.
Filed Oct. 24, 1972, Ser. No. 300,428
Int. Cl. B26d *4/00*
U.S. Cl. 99—491 **7 Claims**

1. An apparatus for cutting the ends off articles having a first color profile in one oriented condition and a second color profile in a second oriented condition, said apparatus including a cutter means operable to cut an end off an article responsive to the presence of the article at the cutter means, and means for feeding said articles seriatim to said cutter means, the improvement which comprises:

means for detecting the color profile of said article on said feeding means; and



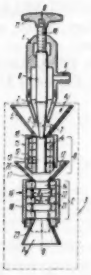
means for actuating said cutter means to cut an end off said article responsive only to the detection of said first color profile by said detecting means.

3,845,704

AIR-BLAST GRAIN HULLER

Yakov Moiseevich Zhislin, 13 proezd Mariinoi Roschi, 44/46, kv. 35; Alexandr Eliseevich Krikunov, prospekt Mira, 7, kv. 20; Alexandr Yakovlevich Sokolov, ulitsa Panfilova, 18a, kv. 30; Alexei Ivanovich Ivanoz, Veernaya ulitsa, 3, korpus 6, kv. 77; Albert Yakovlevich Leikin, Trifonovskaya ulitsa, 54, kv. 193; Efim Naumovich Grinberg, proezd Nansena, 6, korpus 2, kv. 77; Vyacheslav Dmitrievich Vinogradov, ulitsa admirala Makarova, 21, kv. 58; Zinaida Solomonovna Yanovskaya, ulitsa Garibaldi, 27, korpus 1, kv. 67, and Valery Andreevich Bykov, Krasnogvardeisky bulvar, 7, kv. 11, all of Moscow, U.S.S.R.

Filed Feb. 24, 1972, Ser. No. 229,028
Int. Cl. 45e *39/00*
U.S. Cl. 99—519 **1 Claim**



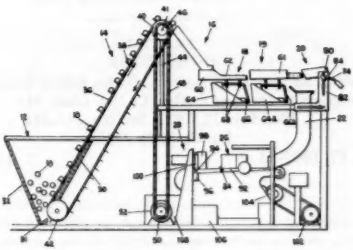
1. An air-blast grain huller, comprising: a chamber with means for supplying compressed air into said chamber; a nozzle communicating with said chamber and having an orifice for discharging air from said chamber and creating a stream of air for hulling grain; a mixing tube for hulling grain by said stream of air discharged from said nozzle, said tube being arranged substantially vertically under said chamber and having a channel with several sections of circular cross-sections arranged one above another, the diameter of a section below a higher section being greater than the diameter of said higher section; ports in said tube and located in the places of transition from one section of the channel to another for passing additional injected air into said channel; a funnel-shaped member in said mixing tube for feeding grain into said channel, said funnel-shaped member containing said nozzle; a stem arranged in the orifice of said nozzle and coaxial with the axis of said nozzle, one end of said stem being held in said chamber, and the other end of said stem projecting in said funnel-shaped member; each section of said channel being formed by a separate auxiliary tube with outlet hole mounted so that the outlet hole of the preceding tube is located within the following one, said ports for passing additional injected air into said channel being formed partially by the lower parts of the auxiliary tubes; each auxiliary tube comprising a series of sleeves enclosed in a casing; said sleeves being made of abrasive material; said sleeves of each auxiliary tube, starting from the second one, having holes of two different diameters and being installed alternately so that the diameter of the channel section jointly formed by them alternately grows and decreases stepwise in a downward direction.

3,845,705

VEGETABLE ORIENTING AND CROWNING

Robert R. Chapman, Lowell, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.

Filed Oct. 24, 1972, Ser. No. 299,925
Int. Cl. A23n *15/04*
U.S. Cl. 99—643 **12 Claims**



1. An apparatus for orienting and crowning elongated articles, such as carrots and the like, such articles having a larger end and a smaller end, said apparatus comprising:

an inclined planar surface means proportioned to permit said articles to roll transversely down the same a given distance, whereby said larger end of said articles will roll farther down than said smaller end in any given length of time;

a straightening means positioned to receive said articles as they pass from the end of said planar surface means, said straightening means having means for guiding said articles to a position whereby the longitudinal axis of said articles are aligned with the direction of movement of said articles within said straightening means;

means for feeding said articles transversely to the upper portion of said inclined planar means with the longitudinal axis of said articles transverse to the incline of said planar surface means;

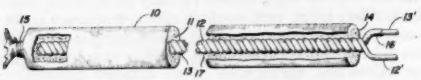
whereby said articles roll from said planar surface means with said larger end first, and thereafter are guided by said straightening means to orient said larger end as said leading end of said article in said straightening means; and

means for severing portions of said heavy end of said elongated article.

3,845,706
APPARATUS FOR CONTINUOUSLY MEASURING TEMPERATURE IN A FURNACE

Robert A. Strimple, Hellertown; George L. McCall, and Robert L. Walker, both of Harrisburg, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 237,164, March 22, 1972, abandoned. This application Jan. 15, 1973, Ser. No. 323,688
Int. Cl. G01k 7/04
U.S. Cl. 73—359 10 Claims

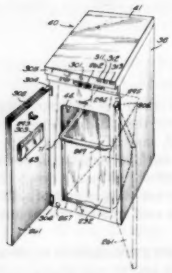


1. A device for continuously monitoring the temperature of the hot face of a refractory lining in a metallurgical furnace, comprising:
   a. holding means,
   b. temperature sensing means comprising a pair of dissimilar wires physically joined at one end contained within said holding means and connected to an external recording device; one of said dissimilar wires being encased in a glass insulator sleeve, and
   c. at least one powdered refractory material taken from the group consisting of chrome ore and chrome oxide, packed within said holding means to separate said holding means from said temperature sensing means.

3,845,707
COMPACTOR

James H. Enright, and Charles A. Wicke, both of Racine, Wis., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 21, 1972, Ser. No. 317,344
Int. Cl. B30b 15/14
U.S. Cl. 100—53 11 Claims

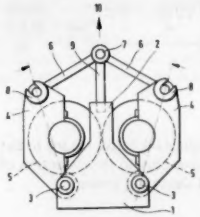


1. A trash compactor having a basket seat, a basket in said seat, a ram movable toward and away from the basket, a motor for the ram, a motor control including a motor switch engaged by the basket when it is fully seated, and means including said ram for disengaging the basket and switch when the ram jams in the basket, whereby to stop the motor, said means comprising means for moving said basket in its seat during a jam, thus to disengage the basket from the switch, said seat and basket having corresponding tapered sides, movement of the basket separating the basket sides from the seat sides to facilitate such movement.

3,845,708
MACHINE FOR COMPACTING, PELLETIZING AND/OR BRIQUETTING

Horst Liebert, Reisbergstrasse 14, 7101 Obergruppenbach, Germany

Filed May 4, 1973, Ser. No. 357,482
Claims priority, application Germany, May 4, 1972, 2221785
Int. Cl. B30b 3/00, 3/04
U.S. Cl. 100—155 8 Claims

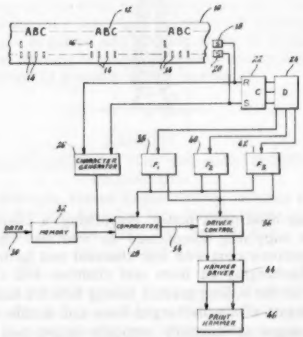


1. A compression pressure machine for compacting, pelletizing and briquetting pulverant, fine-grained or structurally voluminous products, comprising a machine frame, lever cradles articulated pivotably at one end thereof to the machine frame, a pair of horizontally juxtaposed compacting rollers supported by said lever cradles, and a compression device including means for transmitting force along a vertical central axis located between the ends of the shafts of the compacting rollers, means for reciprocally operating said force transmitting means, a pair of traction bars pivotally connected to the opposite ends of the lever cradles, said force transmitting means being connected to said traction bars whereby application of said force pivots said lever cradles and thereby determines the gap between said compacting rollers and the pressure applied by the rollers.

3,845,709
MULTIFONT SELECTION

Derek J. Gardiner, Sudbury, Mass., assignor to Iomec Corporation, Southboro, Mass.

Filed Feb. 26, 1973, Ser. No. 335,862
Int. Cl. B41j 5/10
U.S. Cl. 101—93 C 1 Claim



1. A print timing apparatus for use in font belt printing for printing in accordance with the timing of any of a plurality of

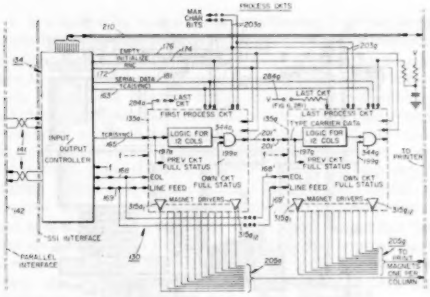
fonts having a different number of characters per set, each different font carried on a font belt, said font belt including a plurality of primary indicia and a plurality of secondary indicia, said primary indicia corresponding to each font on said belt and said secondary indicia corresponding to each character on a font, said first and second indicia positioned on said belt relative to each other in accordance with the size characteristic of each said font, said apparatus comprising a plurality of timing means for controlling the speed actuation of said printer in accordance with the size font on said font belt, a first sensor for sensing said primary indicia, a second sensor for sensing said secondary indicia, a counter coupled to said second sensor and responsive to each secondary indicia for accumulating a count corresponding to said sensed secondary indicia, said counter having a reset input further coupled to said first sensor and responsive thereto to be reset by each sensed primary indicia, the total count thus accumulated in said counter corresponding to a font size, decoding means coupled to said counter and responsive to each total level count accumulated in said counter for providing a unique output, and means coupling each unique output of said decoder to a corresponding one of said plurality of timing means for selecting one of said timing means of said printer.

3,845,710

PRINT CONTROL LOGIC CIRCUITRY FOR ON-THE-FLY PRINTERS

Detlef A. Brodrueck, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 2, 1973, Ser. No. 402,864
Int. Cl. B41j 7/08
U.S. Cl. 101—93.14 **30 Claims**



1. A print control logic circuit for use in high speed on-the-fly printers, for selectively actuating one or more out of a plurality of character print-inducing members whenever selective type characters forming a part of a continuously moving font of type characters are momentarily brought into respectively aligned and juxtaposed relationship with said print-inducing members so as to effect sequential printing of type character images along each successive line on a medium, but with the character images ultimately being positioned in the serial order in which the input data characters to be printed were received, said logic control circuit comprising:

sub-dividable memory means for storing input binary encoded data representative of the characters to be printed at particular positions along a given print line, said memory means having at least two logic controlled and operationally distinct storage areas, and including means for selectively storing input character data in and reading said data out of said storage areas in a manner that allows incoming data intended for printing on one line to be stored in one of said distinct storage areas while any previously received data is still being read out of the other storage area, processed and printed in the preceding line,

means for generating type character font data in multiple phase sequences during each print cycle, said data being representative of and identifying the particular ones of said moving font type characters that are respectively brought into registry with associated ones of said character print-inducing members at any particular point in time during each phase sequence, and

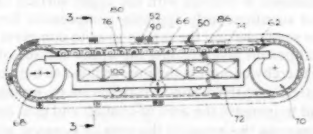
means for processing any stored character data for printing after having been read out of said memory means, by comparing said stored data with said generated type character data, and for generating a distinct print signal, in response to each valid equal signal comparison, for use in actuating at the proper time the particular one of an associated character print-inducing member that will effect the printing of a character image representative of the compared type character at the proper position along a given print line.

3,845,711

BELT PRINTER

Clifford J. Helms, Calabasas Park, Calif., assignor to Data Products Corporation, Woodland Hills, Calif.

Filed Dec. 13, 1972, Ser. No. 314,693
Int. Cl. B41j 9/08
U.S. Cl. 101—111 **12 Claims**



1. A printing apparatus comprising:

hammer assembly means including a plurality of hammers mounted with the impact faces thereof defining a common elongated plane and means for individually actuating each hammer to propel the impact face thereof in a first direction substantially perpendicular to said plane;

means for transporting a web material to be printed upon along a path past said common plane of impact faces; and type assembly means for successively presenting type characters to each of said hammer impact faces, said type assembly means including:

an endless band having inner and outer peripheral surfaces and characterized by being relatively flexible about an axis in the plane of said band perpendicular to its length and relatively rigid about an axis in the plane of said band parallel to its length;

a plurality of elongated slugs each having a type character area on at least one end face thereof, each slug having a mass on the order of five times or more the mass of one of said hammers;

means fixing said slugs to the outer surface of said band with the length of said slugs extending across the width of said band and with said type character areas lying in a substantially common plane;

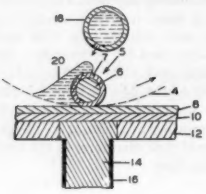
low friction bearing means engaging said band inner surface and supporting said band with said plane of type character areas oriented substantially parallel to said plane of impact faces with said web material path disposed therebetween; and

means for driving said endless band around said low friction bearing means.

3,845,712
SCREEN PRINTING METHOD

Walter J. Lewicki, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 93,183, Nov. 27, 1970, abandoned. This application Sept. 17, 1973, Ser. No. 397,676
Int. Cl. B41m 1/12; B41l 13/06
U.S. Cl. 101—129 1 Claim



1. The method of printing a design on a porous substrate by applying liquid ink through a screen having openings arranged in the desired design pattern which comprises:

arranging in superposed relationship the afore-said substrate and screen and arranging in superposed relationship to the screen a rotatable cylindrical squeegee surrounded by a peripheral porous resilient compressible layer at least one-fourth inch in thickness made of reticulated open cell foam:

rotating the screen on the substrate while rotating the squeegee in contact with the upper surface of the screen and simultaneously applying compressive force between the squeegee and the screen so as to compress the peripheral porous layer against the upper surface of the screen to thereby compress the porous layer to between approximately one-third and two-thirds of its normal thickness and to increase the area of contact and to at least partially compress the pores in the area of contact; and

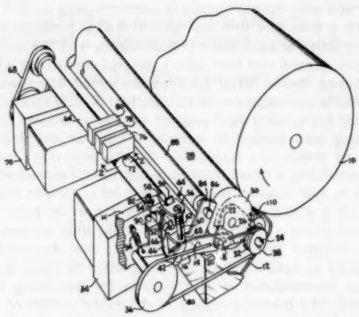
providing a supply of liquid ink at and adjacent in advance to the area of engagement between the screen and squeegee whereby the peripheral porous layer envelops a portion of the liquid ink so that in a continuous manner a portion of the liquid ink is first absorbed and as it enters the area of compressed contact with the screen it is then expelled from the open pores to thereby force the liquid ink under pressure through the openings in the screen and into the substrate substantially throughout the area of contact between the screen and squeegee.

3,845,713
AUTOMATIC ETCHER FOR OFFSET MASTER

William A. Ross, Darien; Roderick N. Schmaling, Norwalk, and Warren E. Olson, New Canaan, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 29, 1973, Ser. No. 327,509
Int. Cl. B41l 23/00
U.S. Cl. 101—148 9 Claims

1. Apparatus for automatically applying an etching solution to an offset master which comprises: a rotatable master cylinder for supporting the offset master; means for rotating the master cylinder; an elongated reservoir for etching solution; said reservoir extending substantially parallel to said master cylinder; a rotatable feed roller extending substantially parallel to said master cylinder; means for rotating said feed roller partially immersed in etching solution in said reservoir; squeegee means engageable with said feed roller; and, automatic control means for sequentially positioning said feed roller in three discrete positions including a make ready position wherein said rotating feed roller is disposed in engagement with said squeegee means but out of engagement with said master cylinder; then in an etching solution application position wherein said rotating feed roller is disposed in engagement with both said squeegee means and said rotating master

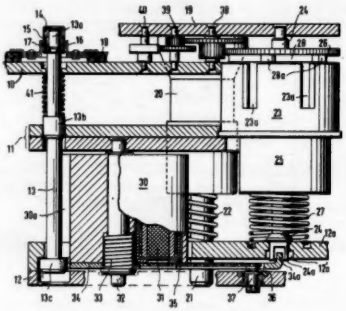


cylinder and then in a rest position wherein said feed roller is disposed out of engagement with both said squeegee means and said master cylinder.

3,845,714
ELECTRIC DETONATOR SYSTEM FOR PROJECTILES

Hans Kaiser, Konigsfeld, Germany, assignor to Gebruder Junghans G.m.b.H., 723 Schramberg, Germany

Filed Jan. 15, 1973, Ser. No. 323,417
Claims priority, application Germany, Jan. 24, 1972, 2203216
Int. Cl. F42c 11/00, 15/24, 9/02
U.S. Cl. 102—70.2 R 4 Claims



1. In an electric detonator assembly for a projectile, said assembly comprising a primer means; electrically actuable primer-detonating means; a detonator circuit connectable between a power source and said primer-detonating means; an impact-responsive switch having a movable element for closing a first portion of said detonator circuit, said impact switch element being normally disposed in a circuit-open position and being mounted so as to be urged toward a circuit-closing position in response to impact of said projectile after launching; a movable arm, said arm having means for closing a second portion of said detonator circuit; means for urging said arm from a safety position in which said second circuit portion is open toward a priming position in which said second circuit portion is closed; safety means for restraining movement of said arm toward its priming position prior to launching of the projectile and for releasing said arm for movement toward its priming position subsequent to launching of the projectile; the improvement wherein:

said impact switch element is disposed adjacent said arm; and

mechanical locking means being operably connected to said arm and being shiftable in response to movement of said arm for:

retaining said impact switch element in its circuit-open position when said arm is disposed in its safety position, and

releasing said impact switch element when said arm is disposed in its priming position such that said impact switch element is capable of movement to a circuit-closing position in response to impact of the launched projectile.

3,845,715

SYSTEM FOR POSITIONING A VEHICLE

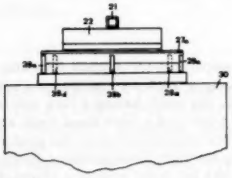
Rolf Hochstrasser, Aarau, Switzerland, assignor to Oehler-, Wyhlen-Lagertechnik A.G., Aarau, Switzerland

Filed Aug. 24, 1972, Ser. No. 283,371

Claims priority, application Switzerland, July 27, 1972, 12732/72

Int. Cl. H01b *35/00*

U.S. Cl. 104—1 R **1 Claim**



1. In a system for automatically positioning a vehicle along a path interrupted by stops in its movement at predetermined locations along said path and for sensing the location of said vehicle coming to a stop at each location by means of inductively functioning reading heads located on said vehicle, coded stop identification means at a side of said path which produce an output in response to the positioning of said reading head adjacent said coded stop identification means, control means to cause the vehicle to move to a coded stop identification means and to stop at said identification means in response to a comparison signal between the output signal read at said stop and a reference signal which determines the ultimate distination at the end of said path that improvement in construction and organization of the stop identification means at a predetermined location and of the inductively functioning reading heads on said vehicle comprising:

a frame member at each predetermined stop position located along said vehicle path adjacent the movement and stopping position of the vehicle under the control of the output signal of the inductively functioning reading heads on the vehicle;

coded stop identification means mounted on said frame member formed of a coded plurality of mutually parallel metallic angle sections detachably supported on said frame member;

a first reading head on said vehicle consisting of an inductance means which, in proximity to said stop identification means produces an output which identifies the specific predetermined stopping position corresponding to said coded stop identification means;

a second reading head spaced from said first reading head by a distance equal to the length of said coded plurality of angle sections which is mounted on said vehicle on the same side as said first reading head to provide a band having ends between which the adjacent stop identification means can be positioned, thereby providing a termination position of said vehicle corresponding to the inductive output signal having a maximum at this precise stop position;

said first and second reading heads having slots to receive said angle sections;

third and fourth reading heads on said vehicle located between said first and second reading heads spaced apart a distance less than the spacing of the first and second heads whereby proximity to said stop identification means produces an output of said third and fourth heads which allows limited movement.

3,845,716

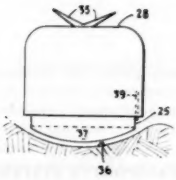
SURFACE EFFECT VEHICLES AND GUIDEWAYS THEREFOR

William R. Bertelsen, 2720 31st Ave, Rock Island, Ill. 61201

Continuation-in-part of Ser. No. 871,765, July 31, 1970, Pat. No. 3,712,406, which is a continuation-in-part of Ser. No. 633,357, April 21, 1967, which is a continuation-in-part of Ser. No. 731,001, April 25, 1958, abandoned. This application Jan. 8, 1973, Ser. No. 321,948

Int. Cl. B61b *13/08*

U.S. Cl. 104—23 FS **9 Claims**



1. A combination road and guideway system for air cushion vehicles, said system comprising a roadway having a substantial longitudinal extent and comprising at least one individual track forming portion which includes a vehicle supporting surface portion, at least one lateral guiding surface portion, and a transition surface portion joining said supporting and guiding surfaces to form a composite track surface of generally curvilinear configuration in front elevation, which track surface forms a combination guideway and reactant surface for said air cushion vehicles whereby a vehicle having a bottom surface substantially the entire portion of which has a contour generally complementary to said track cross section, disposed in said track and sustained on an air cushion will be free to move within said track and will tend to position itself within said track in response to applied forces including sustaining forces applied to said track by said vehicle and in response to gravitational, acceleration, and extrinsic control forces acting upon said vehicle.

3,845,717

VEHICLE TRAFFIC HANDLING SYSTEM

Mihai Alimanestianu, 4 Locust Dr., Upper Nyack, N.Y. 10960

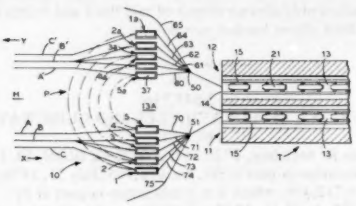
Continuation-in-part of Ser. No. 767,898, Sept. 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 546,317, April 29, 1966, abandoned. This application Nov. 18, 1971, Ser. No. 200,094

Int. Cl. B61b *1/00*

U.S. Cl. 104—26 **11 Claims**

1. In a vehicle handling system for vehicles traveling in a pair of lanes in respectively opposite directions, carrier means for respectively carrying said vehicles arranged for serial movement in each lane, a pair of station means located at terminal points at one end of said lanes and a second pair of station means located at terminal points at the other end of said lanes, one of each pair of station means being arranged for unloading carrier means from one of said lanes, the other

of each pair of station means being arranged for loading carrier means for the other of said lanes, means for propelling the carrier means in each lane, means for guiding the propelled serially related carrier means on one of said lanes in a plurality of divergent paths from said one lane towards said station



means therein, thereafter in a plurality of laterally related paths from said last mentioned station means to the station means in the other of said lanes, and thereafter in a plurality of convergent paths from said last mentioned station means toward said other lane.

3,845,718

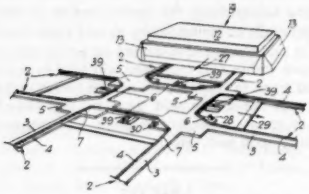
TRANSPORTER SYSTEMS

Peter C. Rogers, Hemel Hempstead; Frank B. Harrison, Berkhamsted; Richard C. Hipkiss, Sussex; Joseph Sunasky, Caddington, and Nigel G. Shapcott, Studham, all of England, assignors to Dexion-Comino International Limited, Middlesex, England

Filed Feb. 16, 1973, Ser. No. 333,102

Int. Cl. E01b *25/06*

U.S. Cl. 104—130 **9 Claims**



1. A transporter system comprising in combination:

a. track means,

b. a car supported upon a plurality of wheels, each wheel being mounted so that it can swivel about an upright axis,

c. a power unit carried upon the car and drivingly connected to at least one of the said wheels, and

d. automatic steering means including

1. passive control means provided in said track means,

2. devices carried upon the car and operable in response to the passive control means for imparting to the said wheels swivelling movement in relation to the car to thereby cause the car to selectively follow a predetermined course along said track means while maintaining its orientation in relation to the system.

3,845,719

GUIDANCE APPARATUS FOR TRACK FOLLOWING VEHICLES

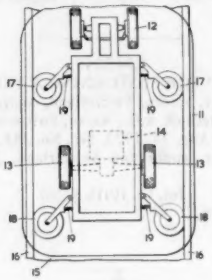
Michael Guy Langdon, Farnham, England, assignor to British Secretary of State for Environment, London, England

Filed May 18, 1972, Ser. No. 254,778

Claims priority, application Great Britain, May 21, 1971, 16183/71

Int. Cl. E01b *25/26*

U.S. Cl. 104—130 **6 Claims**



1. Guidance apparatus for a track-following vehicle normally guided along a track by a guidance abutment at each side of the track, the track having a fork junction dividing it into a left hand track and a right hand track and there being at the fork junction discontinuities in the guidance abutments corresponding to the right hand guidance abutment of the left hand track and the left hand guidance abutment of the right hand track; comprising a left hand guide means and a right hand guide means supported for motion on the vehicle and each movable by selector means comprising a push pull cable in a housing control link connected to each of said guide means and connected to a control lever pivotally supported on the vehicle, movement of the control lever to the left being operative to move said left and right hand guide means clockwise about left and right hand fore and aft vehicle axes respectively into positions where said left hand guide means engage a left hand secondary guidance abutment leading into said left hand track and said right hand guide means are disengaged, and movement of the control lever to the right being operative to move said left and right hand guide means counterclockwise about said fore and aft vehicle axes into positions where said right hand guide means engage a right hand secondary guidance abutment leading into said right hand track and said left hand guide means are disengaged, engagement of a guide means with a secondary guidance abutment acting as a stop to prevent return of that guide means to disengage position throughout passage of the fork junction.

3,845,720

MAGNETIC-LEVITATION VEHICLE WITH AUXILIARY MAGNETIC SUPPORT AT TRACK-BRANCH LOCATIONS

Gerhard Bohn; Gunther Winkle, and Helmut Wende, all of Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Jan. 17, 1973, Ser. No. 324,350

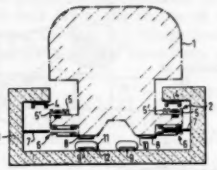
Claims priority, application Germany, Jan. 20, 1972, 2202655; Apr. 27, 1972, 2220735

Int. Cl. B60l *13/00*

U.S. Cl. 104—148 MS **27 Claims**

1. In a magnetic-suspension vehicle system comprising a track having at least one branch region at which one track portion diverges from another track portion, and a vehicle magnetically suspended on said track and selectively directable onto said track portion, the improvement which comprises, in combination:

respective suspension electromagnets extending along opposite sides of said vehicle and cooperating with respective armature rails formed along said track, said rows of suspension electromagnets describing intersecting traces at said branch region, said armature rails being disposed at the sides of the vehicle so that a gap is formed in at



least one of the rails at the branch region to permit the vehicle to selectively traverse said portions; and

cooperating means on said vehicle and said track, at least in said region, and effective to provide a magnetic supporting force for a side of said vehicle through said region at which the corresponding row of suspension electromagnets is ineffective.

3,845,721

LINEAR MOTOR ASSEMBLY FOR DRIVING A VEHICLE OF A CONVEYING SYSTEM

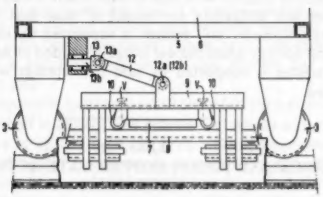
Jakob Wagner, Weisendorf, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Sept. 25, 1972, Ser. No. 291,936

Claims priority, application Germany, Sept. 30, 1971, 2148824

Int. Cl. B60l *13/00*

U.S. Cl. 104—148 LM **2 Claims**



1. In a conveying system having a vehicle with a chassis propelled by a linear motor assembly along a guide structure defining a travel axis, the linear motor assembly comprising a motor truck, a winding carrier mounted on said motor truck, a rail-like return member arranged on the guide structure in operative proximity to said winding carrier, and a guidance arrangement for connecting said motor truck to the vehicle chassis, said guidance arrangement including:

force transition means comprising a fork connected to said motor truck for holding the same so as to be disposed in a direction corresponding to the travel axis, for transmitting pulling and pushing forces from said motor truck to the vehicle, a plurality of movable joints for connecting said force transmission means between said motor truck and the vehicle so as to cause said motor truck to be movable in elevation independent of the vehicle, and articulated joint means comprising a rotatable joint, one of said movable joints and said rotatable joint cojointly defining an articulated joint for connecting said fork to the chassis of the vehicle, and for causing said motor truck to be also movable about and transverse to the travel axis independent of the vehicle, and ancillary linkage means for connecting said motor truck to the chassis of the vehicle in the direction transverse to the travel axis.

3,845,722

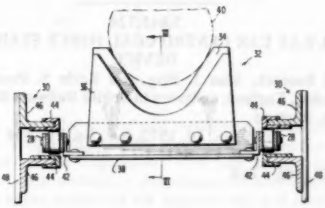
CHAIN-DRIVEN INCLINE

William D. Peppard, Chico, Calif., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 318,980, Dec. 27, 1972, abandoned. This application Feb. 28, 1973, Ser. No. 336,592

Int. Cl. B61b *13/12*

U.S. Cl. 104—165 **9 Claims**



1. In a friction-powered unit carrier system having a plurality of cars which are normally driven over a trackway by the interaction of cylindrical, longitudinally extending reaction members mounted on said cars and powered propulsion wheels mounted adjacent to said trackway, a device for transmitting relatively large amounts of power to said cars comprising:

A bracket having a saddle therein adapted to releasably engage said reaction members, said bracket being U-shaped

means for moving said bracket along said trackway, whereby a car on which is mounted a reaction member releasably engaged by said bracket may be pulled forward by said bracket.

3,845,723

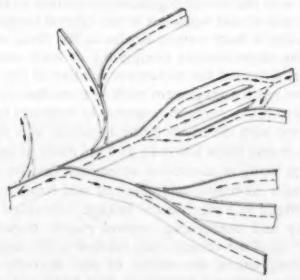
HIGHLY IMPROVED TRANSPORTATION SYSTEM

Justin M. Jacobs, Jr., 1245 Jones St., San Francisco, Calif. 94109, and Neil S. Stafford, Rt. 3, Box 355, San Jose, Calif. 95121

Division of Ser. No. 212,906, Dec. 28, 1971, Pat. No. 3,760,740. This application Aug. 13, 1973, Ser. No. 388,215

Int. Cl. B61b *13/04*

U.S. Cl. 105—147 **12 Claims**



1. Apparatus for use in cantilever fashion on a guidebeam having an inwardly facing vertical upper guide running sur-

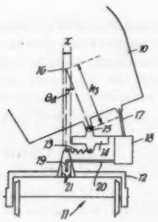
face, an outwardly facing vertical lower guide running surface and a substantially horizintal support running surface comprising a frame, at least two horizontally spaced apart upper guide wheels rotatably mounted on normally vertical axles of said frame and adapted to move on the inwardly facing vertical upper guide running surface, at least two horizontally spaced apart lower guide wheels rotatably mounted on normally vertical axles of said frame and adapted to move on the outwardly facing vertical lower guide running surface, at least a pair of horizontally spaced apart support wheels rotatably mounted on normally horizontal axles of said frame and adapted to move on the support running surface and self-contained means carried on said frame for moving said upper and lower guide wheels transversely on said guidebeam between at least two vertically spaced apart positions on the vertical running surfaces of the guidebeam.

3,845,724

RAILWAY CAR CENTRIFUGAL FORCE STABILIZING DEVICE

David Boocock; Alan J. Bing, and Kevin S. Preston, all of London, England, assignors to British Railways Board, London, England

Filed Jan. 10, 1972, Ser. No. 216,504
Int. Cl. B61f *3/12, 5/10, 5/24*
U.S. Cl. 105—164 **5 Claims**



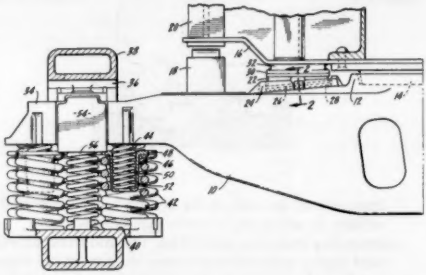
1. In a tracked vehicle of the known type wherein a vehicle body is pivotally connected to a support member which is supported on at least one track follower, operative to guide said vehicle for restrained lateral motion along a track, through a lateral suspension permitting the support member to move laterally of the track follower against a predetermined stiffness of the lateral suspension, and wherein the support member is constrained to move laterally with the vehicle body under centrifugal force by an amount related to the stiffness of said lateral suspension while permitting lateral tilting of said body relative to said support member, means being provided to tilt said vehicle body relatively to said support member through an angle related to the centrifugal force simultaneously with the lateral displacement thereof so that the effective tilt axis of said body lies in the central longitudinal plane of the vehicle body perpendicular to the floor of the vehicle body, the improvement comprising at least two bump stop members mounted for movement relative to one another and operative upon engagement with one another to limit lateral suspension movements in response to transient forces, one of said bump stop members being mounted at a fixed position relative to said track follower, and the other of said bump stop members being mounted for movement relative to said fixed one of said members, said other of said bump stop members being affixed to a mechanical linkage connected to said vehicle body and comprising control means responsive to the angle of tilt of the vehicle body relative to the support member for causing lateral movement of said movable one of said bump stop members relative to said fixed one of said bump stop members by a distance equal and in a direction opposite to the lateral movement experienced by the lateral suspension due to unbalanced centrifugal forces.

3,845,725

SNUBBED RAILWAY TRUCK

Robert W. Gierlach, Downers Grove, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Filed May 4, 1973, Ser. No. 357,505
Int. Cl. B61f *5/06, 5/12, 5/14*
U.S. Cl. 105—197 DB **5 Claims**



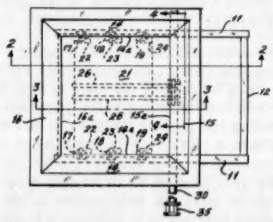
1. In combination in a railroad car, a car bolster and a truck supporting said bolster, said truck including a bolster pivotally attached to the car bolster, a pocket positioned on the upper side of the truck bolster on opposite sides of the pivotal attachment between the bolsters, each pocket having an elastomeric cushion, said cushions retarding relative pivotal movement between the car and truck bolsters, said truck having side frames and spring means supporting said bolster on said side frames, snubbing means dampering the action of said truck bolster with respect to said said side frames, said spring means including a plurality of first springs and a plurality of second springs, a cup positioned within each of said first springs, each cup having an outwardly-extending flange adjacent one end thereof for supporting each cup at the upper end of its respective first spring, each of said second springs being bottomed in its respective cup and extending upwardly in supportive contact with said bolster, each of said first springs having less deflection per pound of load than said second springs, whereby said bolster is supported by said first and second springs when the car is lightly loaded or unloaded and the bolster is supported by said first springs when heavily loaded.

3,845,726

RACK AND PINION HOPPER GATE ACTUATING MECHANISM

Oliver C. Fuller, Woodstock, Ill., assignor to Evans Products Company Transportation Systems Division, Des Plaines, Ill.

Filed Jan. 11, 1974, Ser. No. 432,595
Int. Cl. B61d *7/20, 7/22, 7/26*
U.S. Cl. 105—282 P **9 Claims**



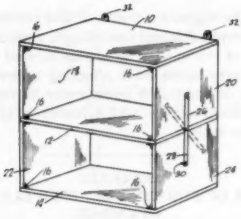
1. A hopper structure including a support frame, an outlet chute carried thereby and having a downwardly facing rim and

a gate therefor slidable along said frame between an outlet-open to an outlet-closing position, said gate being vertically spaced below said outlet rim while open and partially closed, elements on said frame and gate and interengaging to lift the entire gate uniformly throughout its area toward engagement with said rim as it approaches full outlet-closing position, a rack secured to the bottom of said gate, a pinion journaled on said support frame below said gate, said rack having square cut teeth and said pinion having cylindrical teeth in meshed relation with said rack teeth, the shapes of said rack and pinion teeth ensuring constant full engagement of said rack and pinion irrespective of vertical movements of said gate.

3,845,727
FOLDING SHELVING

Herbert S. Chase, Woodmere, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 21, 1973, Ser. No. 343,514
Int. Cl. A47b *43/00*
U.S. Cl. 108—111 **2 Claims**



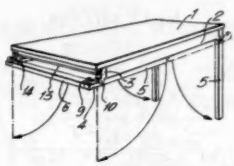
1. Folded shelving comprising:
first, second and third shelves of like length and width;
first, second, third and fourth like panels with pins thereon, also of said width;
means hingedly securing each end of each first and second panel to a corresponding end of a corresponding one of the first and second shelves and hingedly securing each end of each third and fourth panels to a corresponding end of a corresponding one of the second and third shelves; and
manually operable locking means secured at each end of the second shelf to engage said pins on said panels to lock the structure in upright position, each locking means including an elongated bar secured pivotally at its midpoint to a midpoint of an end of the second shelf, each bar always extending at right angles to the longitudinal direction of extension of the shelf.

3,845,728
FOLDING TABLE

Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli S.A.S. di Cesare Castelli & Co., Bologna, Italy

Filed Sept. 14, 1972, Ser. No. 289,137
Int. Cl. A47b *3/08*
U.S. Cl. 108—131 **1 Claim**

1. A folding table comprising
a substantially planar table top having a tubular longitudinal side bar extending along opposed edges thereof,
two opposed pairs of legs for supporting said table top, each pair of legs being securely braced together by a transverse beam and pivotally connected as a unit to said table top so as to fold to a stored position beneath the table top,
a housing inserted into the ends of said tubular longitudinal side bars,
each leg of a unit pair of legs being pivotally connected to a housing inserted in an end of one of said side bars by coaxial pins, and
first locking means stored within each housing cooperating with second locking means on the upper ends of each of said legs for preventing said leg units from pivoting about said coaxial pins so as to lock said leg units in an upright position to support said table top, said first locking means including
a hook arranged at the end of an arm of a lever pivoted intermediate its length about a pin in the housing having its axis parallel to the pivot axis of an adjacent unit pair

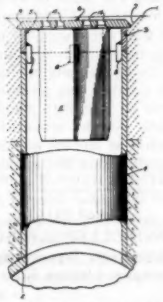


of legs, the other arm of said lever being connected to a strong spring which is so positioned to maintain said hooked arm in engagement with said second locking means which includes a cooperating hook end provided at the upper portion of the adjacent leg, and means for rotating said levers against the bias of the associated springs so as to cause the mutual disengagement of the hooks on said first and second locking means in order to allow each unit pair of legs to be turned until they abut against the lower surface of the table top.

3,845,729
AIR JET HEAD ASSEMBLY FOR PIT TYPE INCINERATORS

Max von Berlichingen, P.O. Box 901, Green Bay, Wis. 54301

Filed Dec. 10, 1973, Ser. No. 424,350
Int. Cl. F23c *7/00*
U.S. Cl. 110—72 R **3 Claims**



1. In an incinerator of the class described having a refractory floor of substantial thickness with a plurality of vertical openings therethrough adapted to supply under-fire air to aid in combustion of the material in the incinerator, a jet head assembly and mounting comprising a generally cylindrical sleeve fixed in an opening and extending upwardly from a source of air to a top position below that generally allowable for wear of the surface of the floor, a jet head plate disposed generally at the level of the upper surface of the floor, and means to support said plate upon said sleeve selectively at a plurality of adjusted levels above the top of the sleeve and consonant with different levels for the top surface of the floor as the latter wears down in service.

3,845,730
AGRICULTURAL APPARATUS

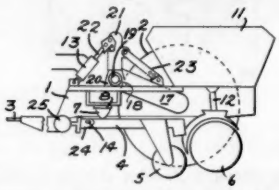
Paul Koronka, Upwaltham, and Richard John Hirst, Billingshurst, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 210,057, Dec. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 874,909, Nov. 7, 1969, abandoned. This application Dec. 7, 1973, Ser. No. 422,785

Claims priority, application Great Britain, Nov. 28, 1968, 56473/68

Int. Cl. A01c *5/06*

U.S. Cl. 111—88 **4 Claims**



1. A seed drill comprising a frame mounted upon ground wheels, said frame having mounted thereon a seed hopper to which conduit means for conveying seed from the hopper to the ground is attached, said frame also supporting a plurality of drag bars bearing soilworking members, said drag bars being pivotally mounted on said frame, a conically shaped rubber spring having an apex and a base, said base of said rubber spring being fixed on said frame with said apex of said rubber spring being disposed to transmit a portion of the weight of said frame to a said drag bar, a said rubber spring being provided on said frame for each of said drag bars, the remainder of the weight of said frame being born by said ground wheels and frame-mounted means for moving said ground wheels vertically with respect to said frame for varying the portion of the weight of said frame born by said drag bars and thereby controlling the depth to which said soilworking members are urged into said soil, said frame-mounted moving means comprising at least a first member to one end of which at least one of said ground wheels is mounted, the other end of said first member being pivotally mounted at its other end to said frame, a lug member also pivotally mounted to said frame and connected to said first member by connecting means and a hydraulic cylinder mounted to said frame and having a piston attached to said lug member for rotating said lug member and therefore said first member

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3,845,731
RECORD CONTROLLED SEWING MACHINE

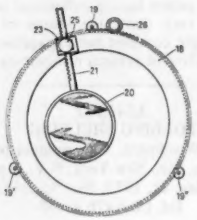
Isamu Sakamoto, Nishinomiya, Japan, assignor to Kokau Camera Laboratory Company Limited, Kobe City, Hyogo Prefecture, Japan

Division of Ser. No. 36,111, May 11, 1970, Pat. No. 3,750,186. This application July 3, 1973, Ser. No. 376,167

Int. Cl. D05c *3/02*

U.S. Cl. 112—102 **4 Claims**

1. Work supporting means for a record controlled automatic sewing machine operable to directly and controllably vary the lateral swing of its needle, and operated and controlled by the recorded pulse outputs of a magnetically inscribed record carrier bearing discrete X-, Y-, and rotational tracks, comprising, a frame adapted to support fabric to be embroidered, a carriage, first means supporting said frame on said carriage for rotation about an axis normal to the plane determined by mutually-normal X-, and Y-axes, second means supporting said carriage for guided translation parallel with said X-axis, third means supporting said second means, carriage and frame for guided translation as a unit, parallel with said Y-axis, first, second and third pulse motors connected to rotate said frame, and to translate said carriage and said second means, respectively, as aforesaid, electric telemetric circuit means connected between said record carrier and said first, second and third pulse motors for controlling the actuation of the latter by and in response to the time-rate of pulses



produced by the respective tracks of said carrier, and a fourth pulse motor energizable and operating to controllably vary the lateral swing of the needle, as aforesaid, said record carrier bearing a discrete fourth track effecting control through said circuit means, of said fourth pulse motor, to vary the swing of the needle in timed relation with actuation of said first, second and third pulse motors.

3,845,732
METHOD OF FORMING BRAIDED ELONGATED OPENINGS

Jean Guichard, Yerres, France, assignor to Centre d'Etudes Techniques des Industries de l'Habillement, Paris, France

Filed Apr. 7, 1972, Ser. No. 241,972

Claims priority, application France, Apr. 9, 1971, 71.12657

Int. Cl. D05b *3/00*

U.S. Cl. 112—264 **10 Claims**

1. The method of making a piped opening in a garment portion, comprising the steps of:

a. pre-forming a rectangular opening with turned-in edges in a bottom piece of material having a front face which will be exposed in the completed garment portion, and a back face opposite to said front face,

b. folding a piping on itself,

c. placing said piping and an auxiliary piece of material against said back face of said bottom piece with the edge of said piping parallel to the lengthwise edge of said opening in said bottom piece,

d. placing a line of stitching adjacent one short end of said opening to secure said piping and the auxiliary piece to said bottom piece,

e. continuing said line of stitching along one lengthwise edge of said opening,

f. continuing said line of stitching along the other short end of said opening, all of said aforerecited lines of stitching securing said piping and said auxiliary piece along three sides of said opening in said bottom piece so that said piping cannot be pushed through the opening in said bottom piece, and

g. placing a line of stitching along the other lengthwise edge of said opening to secure together said bottom piece to an

auxiliary piece, all said afore-recited lines of stitching being placed while said bottom piece is permanently maintained in one and the same position, said auxiliary piece being either the aforesaid auxiliary piece, whereby a button-hole with a single braid is obtained, or a further and other auxiliary piece, whereby a pocket opening with a single braid is obtained.

3,845,733

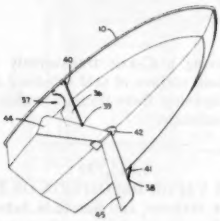
BOAT PROPULSION MEANS

Richard L. Jackman, 2509 S. Main St., New Castle, Ind. 47362

Continuation-in-part of Ser. No. 320,109, Jan. 2, 1973, abandoned, which is a continuation of Ser. No. 91,076, Nov. 19, 1970, abandoned. This application June 11, 1973, Ser. No. 364,802

Int. Cl. B63h *1/32*

U.S. Cl. 115—28 R **1 Claim**



1. A craft propelled by an operator by rocking from side to side which comprises:

a. a buoyant portion being of sufficient buoyancy to keep itself and an operator afloat and

b. a fin fixed to the buoyant portion and having

1. a rigid leading edge,
2. arms extending away from said leading edge near each of its ends,
3. webbing material attached to said arms and generally between them,
4. a support member positioned along the trailing edge of said fin and generally between said arms and
5. an elastic band stretched between said arms along the trailing edge of said fin.

3,845,734

APPARENT WIND INDICATOR ADAPTED TO ESTABLISH OPTIMUM WIND DIRECTION RELATIVE TO THE SAIL OF A SAILBOAT

Peter T. Demos, 49 Orchard St., Belmont, Mass. 02178

Filed Nov. 28, 1972, Ser. No. 310,027

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 R **16 Claims**

1. An apparent-wind indicator for establishing optimum apparent-wind direction relative to the sail of a sailboat, that comprises: a wind vane, mounting means secured to a sail fixture, the wind vane being rotatably attached to the mounting means, said mounting means being exposed to the apparent wind to permit orientation of the vane in the wind direction, said sail fixture being one that pivots with the sail, and means for visually establishing by direct observation of the wind vane an optimum apparent-wind angle between the vane and the sail.

3,845,735

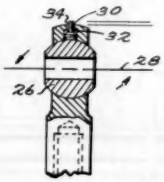
APPARATUS FOR MEASURING WEAR OF ROD END BEARINGS

Robert B. Bossler, Jr., Bloomfield, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed June 22, 1973, Ser. No. 372,666

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 Q **5 Claims**



1. In combination:

a bearing member having an inner bearing surface bounding a journal means receiving space and an outer surface, a raceway adjacent and opening onto said inner surface and a bore extending between said raceway and said outer surface;

journal means mounted within said journal receiving space of said bearing and bounded by said inner bearing surface; and

an indicator pin having a portion extending in said raceway from one end of said portion which contacts said journal means to a shoulder for holding said pin in said raceway and preventing said portion moving into said bore and an indicator end extending from said shoulder through said bore to a position with respect to said outer surface of said bearing member indicating wear when said seat is in contact with said journal means.

3,845,736

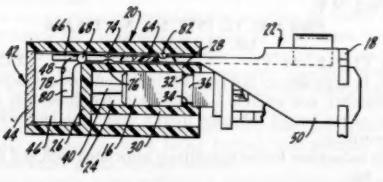
PUSHBUTTON SWITCH WITH POSITION INDICATOR

Bernard J. Golbeck, Crystal Lake, and Raymond F. Lewandowski, Mt. Prospect, both of Ill., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed Nov. 20, 1972, Ser. No. 308,252

Int. Cl. G09f *9/00*

U.S. Cl. 116—124 R **13 Claims**



1. Pushbutton switch means including a switch device having a stationary member and a plunger positioned adjacent

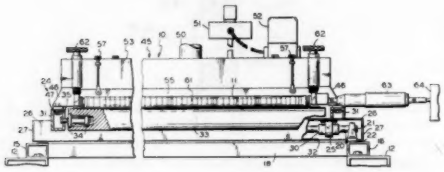
and reciprocal relative thereto, an indicator housing fixed to said plunger, lens means in said housing, pivotally movable indicating means attached to said stationary member and including an indicia area positioned within said housing, means in said housing defining a path of movement for said indicia area including housing portions defining a track, guide means on said indicating means movable in said track, movement of said housing and plunger toward said stationary member causing said indicating means to pivotally move within said housing to a position adjacent said lens means.

3,845,737

ENDLESS BELT PROCESSING APPARATUS

William C. Heussy, Shedd, Oreg.; Earl L. Vetor, Anderson, Ind.; Keith P. Delaney, Philomath, and Paul E. Hyde, Corvallis, both of Oreg., assignors to Evans Products Company, Portland, Oreg.

Filed Sept. 15, 1972, Ser. No. 289,556
Int. Cl. B05d *5/02*; **B05c** *11/10*
U.S. Cl. 118—8 **10 Claims**



1. An apparatus for controlling the deposition of powder and like materials on an endless moving belt, comprising

base means;

carriage means mounted on said base means beneath the endless moving belt at a location at which deposition of the materials on said belt is desired, said carriage means being transversely slideable with respect to said base means;

belt follower means comprising a pair of cam followers mounted one on each side of said carriage means, each of said cam followers being adapted to contact a side edge of said belt for moving said carriage means transversely of said belt in either transverse direction to correspond with transverse movement of said belt; and

deposition means mounted on said carriage means above said belt for depositing powder and like materials on said belt,

said deposition means thereby achieving a transverse travel corresponding to transverse movement of said belt and consequent constant alignment therewith.

3,845,738

VAPOR DEPOSITION APPARATUS WITH PYROLYTIC GRAPHITE HEAT SHIELD

Samuel Berkman, Florham Park, and Ural Roundtree, Jr., Westfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 12, 1973, Ser. No. 396,564
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **3 Claims**

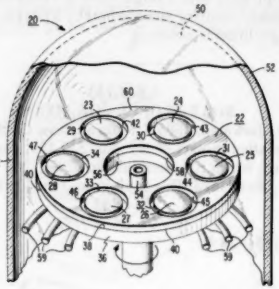
1. In apparatus of the type wherein a substrate is heated in a chamber, and wherein a substance is deposited onto a surface of the heated substrate from a vapor, the improvement comprising:

an inducation heater operatively associated with said chamber,

a susceptor, comprising conventional graphite, disposed within said chamber,

said substrate is a wafer of silicon and disposed on said susceptor,

said substance is silicon epitaxially deposited on said surface, and said heat shield being supported on said susceptor and comprising a planar member of pyrolytic



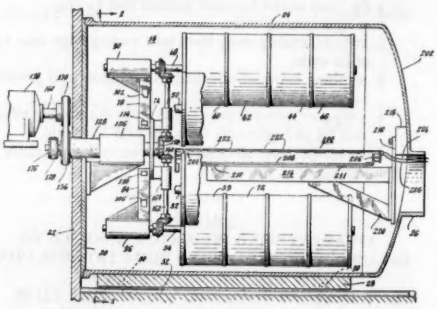
graphite having a C-axis transversely disposed with respect to said surface of said substrate and said shield having an opening there-through within which is disposed said substrate.

3,845,739

SYSTEM FOR VAPOR DEPOSITION OF THIN FILMS

Francis J. Erhart, Webster, and Harold H. Schroeder, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 244,374, April 17, 1972, abandoned. This application Sept. 25, 1973, Ser. No. 400,593
Int. Cl. C23c *13/08*
U.S. Cl. 118—49.1 **3 Claims**



1. Apparatus for the vapor deposition of a layer of material on substrate bodies comprising:

a generally vertically oriented support table adapted for rotation about a horizontal axis;

means for rotating said support table;

a plurality of elongated horizontally oriented mandrels rotatably supported in an annular array on said support table;

means for rotating each of said mandrels about a longitudinal axis thereof;

each of said mandrels adapted for receiving, supporting, and rotating therewith a plurality of substrate bodies;

means for vaporizing a predetermined quantity of material which is to be deposited upon said substrate bodies;

heating means including an electrode mounted and adjustably positioned adjacent the annular path of travel of said mandrels and extending substantially coextensively with

the elongated mandrels, means for applying an electric potential between said electrode and said substrate support bodies for establishing a glow discharge between said electrode and said substrate support bodies for forming an interface barrier layer on said support bodies; and

means providing an evacuated enclosure for said heating means, mandrels, and the substrate bodies supported thereon.

3,845,740

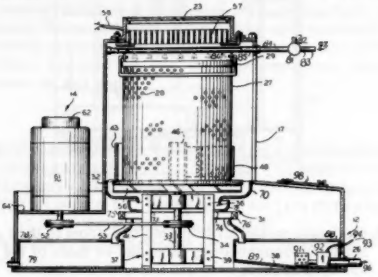
CENTRIFUGAL MEANS FOR DRYING AND APPLYING LIQUIDS TO ARTICLES

Achille K. Ferrara, 1030 Kendall Trail, Addison, Ill. 60101

Division of Ser. No. 91,798, Nov. 23, 1970, Pat. No. 3,688,906. This application Feb. 25, 1972, Ser. No. 229,605

Int. Cl. B05c *5/00, 11/12*

U.S. Cl. 118—52 **3 Claims**



1. A centrifugal dryer for spinning machine parts at a high rotational velocity to remove ambient fluids and dry the machine parts,

said dryer comprising a base section,

said base section supporting a cabinet section rising from said base section,

access opening means in the side wall of said cabinet section for mounting and dismounting said basket on said spinner platform means,

a separate removable perforated basket means for holding said machine parts for transporting and for drying,

spinner platform means located within said cabinet for spinning said basket,

motor means mounted on said base section for supplying power necessary to spin said spinner platform means,

clamping means having locked and unlocked position for locking said basket to said spinner platform means when in the locked position and enabling horizontal movement of said basket when in the unlocked position, whereby said basket can be mounted and dismounted,

control means for selectively starting or stopping said motor means,

coupling means for coupling said motor to said spinner platform means,

means for selectively showering additive fluids on said parts while said spinner assembly is operating, and

said showering means comprising valve means for selectively directing a flow of additive fluids through said dryer.

3,845,741

APPARATUS FOR REMOVING EXCESS COATING MATERIAL FROM CHAIN LINK FABRIC

Keith E. Roberts, P.O. Box 485, Huntsville, Ala.

Filed Feb. 6, 1973, Ser. No. 330,118

Int. Cl. B05c *11/12*

U.S. Cl. 118—57 **10 Claims**

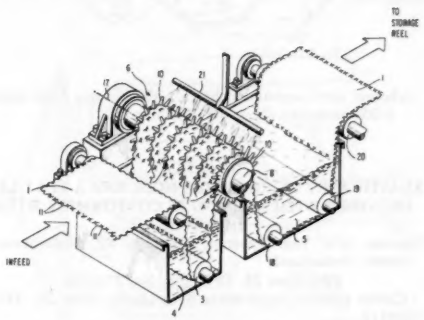
1. An arrangement for removing excess molten coating material from chain link fabric of the type having a plurality of openings formed between intersecting fabric members; said arrangement comprising:

coating means for coating said fabric and cooling means for cooling said fabric after it has been coated,

at least one sprocket member having a plurality of outwardly projecting sprocket teeth,

and means for movably guiding chain length fabric over a predetermined portion of the circumference of said at least one sprocket member such that portions of said teeth extend through respective openings in said fabric during movement of said fabric over said at least one sprocket member,

wherein said teeth are configured and positioned with respect to said openings such that said teeth cause vibration of said fabric when said fabric is moved from a position



with said portions of said teeth extending through said openings to a position with said portions of said teeth removed from said openings,

wherein at least some of said teeth have a plurality of notches arranged along the longitudinal extent of said teeth, said notches being engageable with the fabric members around the respective openings to cause said vibration of said fabric,

and wherein said at least one sprocket member is disposed in the path of said fabric between said coating means and said cooling means, whereby excess coating material supplied to said fabric by said coating means is removed from said fabric before cooling of said fabric by said cooling means.

3,845,742

FUSER ROLL CONSTRUCTION

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 17, 1973, Ser. No. 361,113

Int. Cl. G03g *13/08*

U.S. Cl. 118—60 **5 Claims**

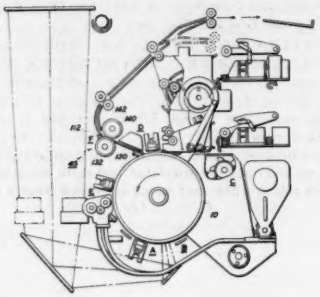
1. In an electrostatic reproduction machine in which the fusing device for fusing powder images to copy sheets is accomplished by passing the powder images on the sheets through the nip of compressible rotatable members which apply heat and pressure, an improved fuser roll comprising;

a rigid core member;

a layer of elastomeric material overlying said core member; said elastomeric layer being formed with at least one undulation in the surface thereof,

said undulation being sufficiently wide and deep and conforming to the powder image surface under operating conditions to impart sheet rigidity to facilitate release of the sheet from the roll surface,

wherein each undulation has a depth ranging from about 0.0015 inches to about 0.005 inches,



wherein each undulation has a width ranging from about 0.050 inches to about 0.500 inches.

3,845,743

ELASTICALLY DEFORMABLE HOSE AND A TEAT CUP PROVIDED WITH A LINING IN CONFORMITY WITH THIS HOSE

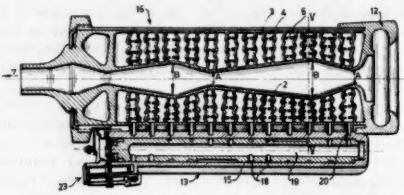
Nicolaas Arie Van Staveren, Maasdijk 82, Nederhemert-Noord, Netherlands

Filed June 28, 1973, Ser. No. 374,344

Claims priority, application Netherlands, June 30, 1972, 7209111

Int. Cl. A01j *05/12*

U.S. Cl. 119—14.31 **6 Claims**



1. A hose of elastically deformable material with force exerting members arranged all round the hose and axially spaced for achieving a longitudinally progressive contraction followed by a spaced and longitudinally progressive expansion, the force exerting members consisting of bellows connected with the hose, and regulating means progressively communicating said bellows with a source of vacuum and with the atmosphere.

3,845,744

ANIMAL SELF FEEDER

Hugh G. Carr, Kansas City, and William L. Steffen, Liberty, both of Mo., assignors to The Starr Corporation, Kansas City, Kans.

Filed July 16, 1973, Ser. No. 379,622

Int. Cl. A01k *05/02*

U.S. Cl. 119—51.13 **7 Claims**

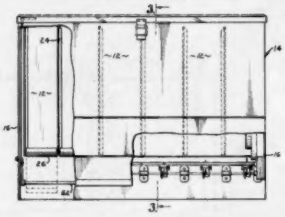
1. Apparatus for delivering a measured quantity of feed to an animal at multiple predetermined spaced apart time intervals, said appartus comprising:

a plurality of side-by-side feed compartments, each compartment containing a measured quantity of feed separate and apart from the feed in the other compartments, each of said compartments being characterized by a hingedly coupled delivery door disposed for gravitating to an open position to accommodate gravitation of feed from the compartment;

catch means for holding each of said doors in a normally closed position;

common activator means for all of said catch means for selectively releasing each catch means at a predetermined time interval to open a compartment door;

timing means coupled with said activator means for periodically operating the latter at said predetermined time intervals;



door closure means for returning said doors to their closed positions simultaneously after one or more of the doors has been opened;

a common lid for all of said compartments hingedly coupled therewith for movement from a closed to an open position to thereby accommodate filling of the compartments with feed; and

linkage means coupling said door closure means with said lid for moving said door closure means to its door closing position when said lid is opened.

3,845,745

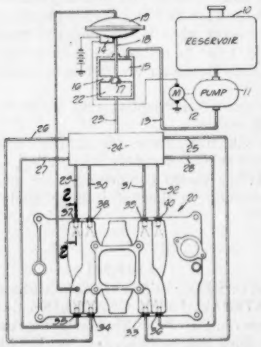
WATER INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Charles R. Dunlap, and Harris D. Himes, both of 1746 Yorba Dr., Pomona, Calif. 91768

Filed July 3, 1972, Ser. No. 268,474

Int. Cl. F02b *47/02*; **F02d** *19/00, 19/12*

U.S. Cl. 123—25 L **3 Claims**



1. Water injection system for an internal combustion engine having a plurality of combustion chambers and a manifold via

which a fuel-air mixture is conduited to said combustion chambers, comprising:

a reservoir of distilled water;

an electrically powered pump for providing pressurized water from said reservoir;

a poppet valve having an inlet connected to receive the pressurized water from said pump and an outlet, said valve being actuatable to pass selectively variable amounts of pressurized water to its outlet;

a plurality of pintle valve and nozzle means each located in the manifold closely adjacent an individual combustion chamber;

individual feed line means interconnecting the poppet valve outlet and the pintle valve and nozzle means; and

means responsive to manifold pressure for interconnecting electric power to said pump and for actuating said poppet valve on manifold pressure exceeding a predetermined threshold amount, said means responsive to manifold pressure including a diaphragm pressure regulator, rod means connected with said regulator and positioned in correspondence with the manifold pressure, and switch means operated by said rod interconnecting electric power to said pump.

3,845,746

METHOD OF AND ARRANGEMENT FOR CONTROLLING THE SWIRLING AIR LAYERS IN THE CYLINDERS AND COMBUSTION CHAMBERS OF AN AIR-COMPRESSING MULTI-CYLINDER RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINE

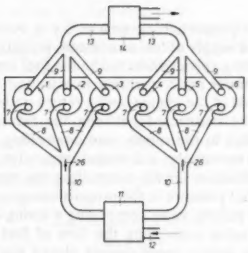
Ludwig Elsbett, Industriestrasse 14, 8551 Hilpoltstein, Germany

Filed Dec. 9, 1971, Ser. No. 206,373

Claims priority, application Germany, Dec. 12, 1970, 2060740

Int. Cl. F02b *19/10, 3/00*

U.S. Cl. 123—30 C **10 Claims**



1. A method for controlling the swirling air layers in the cylinder and combustion chamber of an air-compressing multi-cylinder reciprocating internal combustion engine having a combustion chamber in the shape of a body of revolution provided in each piston and means associated with each intake valve to induce a swirling motion of inducted air in the cylinder; said engine also having an induction system composed of connected groups of two or more individual cylinder intake pipes whose intake strokes do not overlap with the said connected groups being themselves connected to a single common intake, the said induction system being so proportioned that the pressure prevailing at the individual intake valves is at a sub-atmospheric level during the first of the intake stroke but rises to a pressure above atmospheric shortly before the end of the intake stroke and thus acting as a positive pressure on the cylinder, the method of operation including the steps of (1) opening the inlet valve on the inlet stroke only after the closure of the exhaust valve and after the pressure in the associated cylinder is equal to the pressure in the associated intake pipe (2) building an increased pressure differential across the engine cylinder shortly before the end of the intake stroke by the positive pressure produced by the induction system (3) reopening the exhaust valve shortly before the end of the intake stroke upon development of said pressure differential and (4) closing the exhaust valve at the same time the intake valve is closed at the end of the intake stroke.

3,845,747

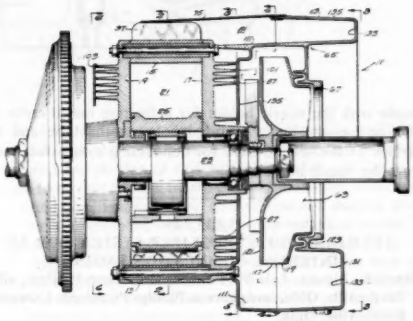
ROTARY COMBUSTION AIR COOLING ARRANGEMENT

James A. Donohue, Milwaukee; John H. Winston, Menomonee Falls, and Harry M. Ward, III, Waukegan, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 8, 1973, Ser. No. 321,694

Int. Cl. F02b *55/12*

U.S. Cl. 123—8.01 **15 Claims**



1. A rotary combustion engine comprising a hollow housing, a pair of spaced end walls interconnected with said hollow housing to form a cavity, a rotor shaft extending in said cavity and rotatably journaled by said end walls, fuel intake means communicating with said cavity, exhaust discharge means communicating with said cavity, a combustion zone in said cavity between said intake means and said exhaust discharge means, whereby said housing includes a sector which extends between said intake means and said exhaust discharge means and which is relatively hotter than the remaining portions of said housing, a plurality of cooling fins extending radially outwardly from said housing sector in generally parallel relation to said rotor shaft, a centrifugal fan driven by said rotor shaft and having a circumferentially extending radially open outlet, a shroud defined by first wall means enclosing said fan and extending radially outwardly from said fan outlet, said shroud communicating with said radially open circumferentially extending fan outlet and including a shroud discharge outlet, and second wall means including a first portion engaging the radially outer ends of said cooling fins to provide a plurality of cooling passages extending axially of said housing, and a second portion extending from said first portion and cooperating with said shroud to define a duct extending from said shroud discharge outlet to said plurality of cooling passages.

3,845,748

FUEL INJECTION NOZZLE HOLDER INSTALLATION

Eugene Eisenberg, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

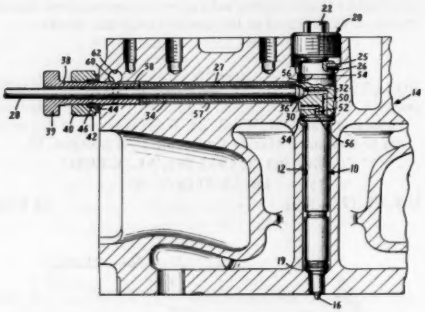
Filed Sept. 29, 1972, Ser. No. 293,336

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 R **16 Claims**

1. A fuel line installation for a fuel injection nozzle holder used in an internal combustion engine having at least one

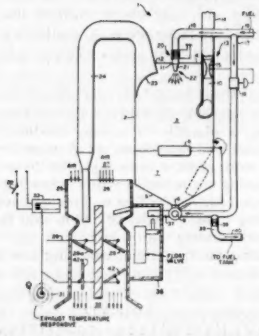
cylinder head comprising a first bore formed in the cylinder head for receiving the nozzle holder, a second bore formed in the cylinder head communicating with the first bore, and a tube received within the second bore and adapted to communicate with the nozzle holder for delivering fuel thereto, an annular passage being afforded between the tube and the surface of the second bore for conducting return fuel away from the nozzle holder.



3,845,749
AUXILIARY FUEL VAPORIZER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Henry E. Alquist; Lyle W. Pollock, and Glenn H. Dale, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 30, 1972, Ser. No. 268,788
Int. Cl. F02m 17/18
U.S. Cl. 123—133 **8 Claims**



1. Apparatus to supply fuel-air mixtures to an internal combustion engine comprising:

a carburetor having first and second sections, each adapted to convey fuel and air to the engine;

a first valve in said first section and a second valve in said second section;

first fuel supply means connected to said first section to deliver liquid fuel thereto from a fuel tank;

an evaporation vessel having a first outlet in the upper region thereof and a second outlet in the lower region thereof;

second fuel supply means connected to said vessel to deliver liquid fuel thereto from the fuel tank;

inlet means in said vessel to permit introduction of air into said vessel;

conduit means extending between said first outlet and the second section of said carburetor to convey vaporized fuel and air from said vessel to said second section;

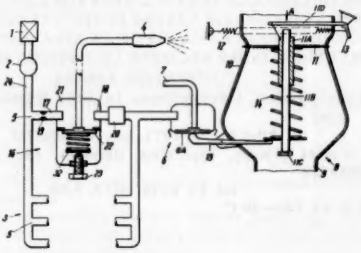
a temperature sensing means adapted to sense the temperature of exhaust gases from the engine; and

means responsive to said temperature sensing means to control said valves to open said first valve and close said second valve when the measured temperature reaches a predetermined value.

3,845,750
FUEL PROPORTIONING SYSTEM FOR A COMBUSTION ENGINE

Horst Harings, deceased, late of 289 Nordenham, Germany (by Willi Enge, administrator)

Filed Dec. 26, 1972, Ser. No. 318,400
Claims priority, application Germany, Dec. 24, 1971, 2164523
Int. Cl. F02m 51/00
U.S. Cl. 123—139 AW **4 Claims**



1. A fuel proportioning system for a combustion engine comprising a supply of fuel at constant pressure; a proportioning and pulsing valve connected to the fuel supply and having a delivery outlet for connection to injection apparatus in an inlet manifold of the engine, and a return outlet; an adjustable throttle valve connected between the return outlet and a return conduit to the supply, and controlling the rate of fuel returned to the supply; and means responsive to the throughput of combustion air for controlling the throttle valve and hence the fuel pressure in the proportioning valve; the proportioning and pulsing valve comprising a spring-loaded pressure responsive valve controlling the flow of fuel to the delivery outlet being spring urged toward closed position and being urged open by fuel pressure, said valve oscillating open and closed to pulse the fuel to the delivery outlet and means in the connection to the fuel supply to prevent instantaneous pressure equalisation in the valve on opening of the delivery outlet.

3,845,751
OIL PURIFYING MEANS EMPLOYED IN CONNECTION WITH INTERNAL COMBUSTION ENGINES

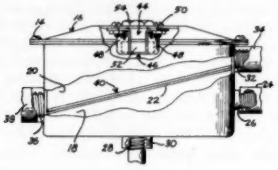
Roy H. Runstetler, 650 Redland Dr., Grants Pass, Oreg. 97526

Filed Aug. 30, 1973, Ser. No. 392,972
Int. Cl. F01m 1/06
U.S. Cl. 123—196 A **3 Claims**

1. An oil purifying unit for incorporation in an internal combustion engine, which engine has an exhaust line for discharging hot exhaust gases produced as an incident of its operation, and contaminates with water and fuel the lubricating oil employed by it, said unit comprising, when so incorporated, a prismatic box-like structure which is divided into

a. an upper engine oil transmitting and purifying, water and fuel evaporating chamber, interposed in an oil return line of the engine and having a high oil intake port at an oil intake end, a low oil discharge port at the opposite or oil discharge end, and a vapor discharge port for disposing of vapors produced in said chamber, through which chamber the engine oil may be caused to travel in a broad, thin layer by gravity from end to end under flow conditions which are essentially identical from side to side of the chamber, and

b. a lower hot-exhaust-gas-transmitting, heat supplying chamber interposed in an exhaust bypass line of the engine said heat supplying chamber having widely separated intake and discharge ports for the hot exhaust gases located, respectively, in an upstanding wall and in the floor, of the chamber, the crosssection of said lower heat supplying chamber being larger than the cross-section of the intake and discharge ports,



c. the division of the box-like structure into upper and lower chambers being effected by a thin, generally flat, imperforate, metallic dividing wall which forms a heat transmitting floor for heating the upper chamber and a roof for the lower chamber, and which extends evenly from side to side of the box-like structure throughout its length, but slopes downward continuously and uniformly from the oil intake end of the upper chamber to a level at the oil discharge end thereof, not substantially below the lower extremity of the oil discharge port,

the unit being further characterized by the fact that oil-spreading, damming means are provided at intervals along the upper surface of the sloping dividing wall for prolonging the transmission of the oil through the upper chamber, for collecting the oil in a succession of shallow pools, and for promoting uniformity of oil distribution throughout the width of the upper chamber, each of which damming means extends at an even and uniform height throughout the width of the upper chamber.

3,845,752

COMBINED BOWSTRING DRAW AND TRIGGER RELEASE MECHANISM FOR USE IN ARCHERY

Roland K. Barner, Box 1035, Bozeman, Mont. 59715

Filed Feb. 21, 1974, Ser. No. 444,526
Int. Cl. F41b *5/00*
U.S. Cl. 124—35 **8 Claims**

1. A bowstring holding and release device comprising in combination:

a handle member adapted to be gripped by the human hand, holding and release means mounted on said handle for releasably engaging a bowstring,

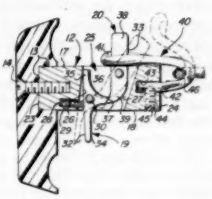
said holding and release means comprising a pivotally mounted holding member for movement between first and second positions for holding and releasing the string respectively,

trigger means engaging a first end portion of said holding member to retain said holding member in said first position when said trigger means is in a first pivoted position, said trigger means being pivotable to a second position out of engagement with said portion to permit said holding member to pivot to its second position for releasing the string,

said holding member when manually moved to said first position being engaged by said trigger means,

locking means for selectively holding said trigger means in said first pivoted position for retaining said holding member in said first position,

said locking means including biasing means for automatically rotating the triggering means back to its locking position after pivoting of said trigger means from said first position to said second position, and



flexible cord means connected to said holding and release means and looped around the bowstring and over a second end portion of said holding member,

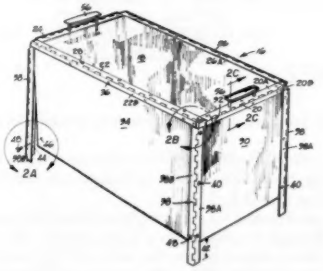
whereby said locking means holds said holding member and said cord means around said second end portion of said holding member when said trigger means is in said first position and said bowstring is tensed, and when said trigger means moves to said second position said cord means slips off of said second end portion of said holding member and from around the bowstring as the bowstring moves to its released position.

3,845,753

OVEN ENCLOSURE FOR A GRILL

William B. Jackson, 1256 Laurel Hill Dr., San Mateo, Calif. 94402

Filed May 9, 1974, Ser. No. 468,227
Int. Cl. F24c *1/16*; **A47j** *37/01*; **F24b** *3/00*
U.S. Cl. 126—9 R **6 Claims**



1. A foldable oven enclosure for a grill of the type having a fire pan and a perforated viands support rack overlying the fire pan, said enclosure comprising a rectangular substantially rigid impervious top panel having a length and width exceeding that of the grill, means secured to the peripheral margin of said top panel for stiffening said top panel, said stiffening means including four continuous horizontal hinges having lengths corresponding to respective peripheral margins of said top panel, each said hinge having a first plate and a second plate connected to said first plate for pivotal movement rela-

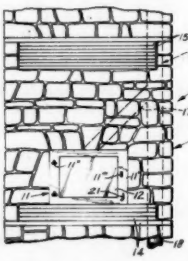
tive thereto, means for securing the first plate of each said hinge along a respective peripheral margin of said top panel, four rectangular substantially rigid impervious side panels each having vertical dimension no greater than the width of said top panel, said side panels each having a horizontal dimension corresponding to respective peripheral margins of said top panel, means for securing the upper horizontal margin of said side panels to said second plates of respective said hinges so that said side panels are movable between a folded position into surface contact with said top panel and an operative position at which said side panels depend perpendicularly from said top panel to define a right parallelepiped chamber and in which the vertical edges or adjacent said side panels are disposed in parallel juxtaposition to form corner regions of said chamber, means for stiffening said side panels and for sealing said corner regions, last said means including four equi-length continuous vertical hinges having a length exceeding the vertical dimension of said side panels, said vertical hinges each having a first leaf and a second leaf connected to said first leaf for pivotal movement relative thereto, means for securing the first leaf of each said vertical hinge to a respective vertical edge of two opposite side panels so that said two opposite side panels are stiffened by said vertical hinges, and means for removably connecting the second leaves to vertical edge margins of the other two side panels, the excessive length of the vertical hinges acting to space the lower edges of said side panels above the lower extremities of said vertical hinges to define an inlet for combustion air to said fire pan.

3,845,754

FIREPLACE HOME HEATER

Albert L. Wilkening, Walker, Minn. 56484

Filed Mar. 9, 1973, Ser. No. 339,827
Int. Cl. F24b 7/00
U.S. Cl. 126—121 **2 Claims**



1. A fireplace heater for a dwelling comprising in combination:

a. a closed firebox for the combustion of solid fuel, including an air-tight door to provide access thereto for insertion of said fuel;

b. an enclosure for receiving said firebox having an opening through which said door is accesssible, and having inlet louver means below the level of said door and outlet louver means above the level of said door to define a heating gas path around said firebox;

c. an air intake pipe extending through said enclosure for conducting combustion air to said firebox;

d. a flue pipe extending from said firebox through said enclosure to conduct gaseous combustion products therethrough, a portion of said flue pipe extending downwardly into the interior of said firebox with the peripheral wall of said flue pipe portion containing an opening, said interior flue pipe portion serving to baffle and slow the flow of heated gaseous combustion products through the firebox thereby increasing the fireplace heat output; and

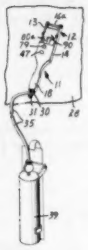
e. said air intake pipe and said flue pipe defining a combustion gas path through said firebox which is independent from said heating gas path so that no combustion products are discharged into the dwelling through said outlet louver means and no air from within said dwelling is discharged through said flue pipe.

3,845,755

T-MANIFOLD ASSEMBLY FOR GAS HEATED TOOL

Leonard E. Aske, 5508 Park Ave., Minneapolis, Minn. 55417

Filed Dec. 7, 1972, Ser. No. 312,824
Int. Cl. F24j 3/00
U.S. Cl. 126—401 **2 Claims**



1. Apparatus for producing a broad flame front from a supply of combustible gas comprising:

a. a T-manifold assembly having a longitudinal portion and a transverse portion;

b. said transverse manifold portion containing a plurality of flame outlet openings positioned therealong in a generally linear, spatially separated relationship;

c. conduit means connected to said longitudinal manifold portion and connectable to a source of combustible gas; and

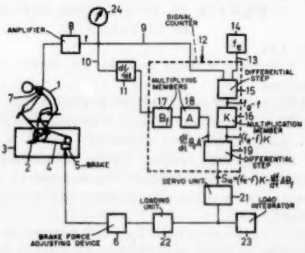
d. said manifold assembly including further means adjacent said outlet openings to modify the flow of combustible gas issuing from said outlet openings to establish and retain combustion closely adjacent said transverse portion.

3,845,756

ERGOMETER DEVICE

Sven-Gunnar Sigvard Olsson, Solluntuna, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 184,391, Sept. 29, 1971, abandoned. This application June 28, 1972, Ser. No. 266,891
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 R **4 Claims**



1. An ergometer comprising, in combination, force exerting means adapted to be operated by a subject, braking means

controlling the force to be exerted upon the force exerting means, and control means for determining the amount of braking force to be applied, a heart frequency measuring means enclosing electrodes connectable to the subject for producing an electrical signal corresponding to the real heart frequency f of the subject, an ideal heart frequency generating means for setting an ideal heart frequency f_e and producing an electrical signal corresponding to this ideal heart frequency f_e, a differentiator connected to the output of the heart frequency measuring means for producing the first derivative df/dt of the real heart frequency signal, and further comprising an electronic control signal calculator means connected to the outputs of said heart frequency measuring means, said ideal heart frequency generating means and said differentiator for calculating from the outgoing signals of said heart frequency measuring instrument, said ideal heart frequency generator and said differentiator a control signal S_R pursuant to the equation

$$S_R = (f_e - f) \cdot K - (df/dt) \cdot A \cdot B_f ,$$

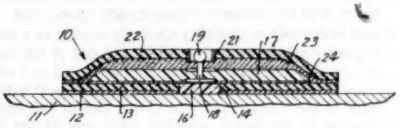
where K and A are constants and B_f is a variable proportionality factor, said calculator means including means to provide said proportionality factor as a function of both the real heart frequency f and the polarity of the real heart frequency alteration df/dt, which factor B_f in the presence of a positive polarity of the heart frequency alteration ($df/dt > 0$) increases with higher real heart frequencies, remains constant in the presence of negative polarity ($df/dt < 0$), said control signal S_R is connected to the input of said brake control means for controlling said brake control means to produce a higher amount of braking force when the strength of the control signal increases, and a lower amount of braking force when the strength of the control signal decreases.

3,845,757

BIOMEDICAL MONITORING ELECTRODE

James H. Weyer, Stillwater, Minn., assignor to Minnesota Mining & Manufacturing Company, Saint Paul, Minn.

Filed July 12, 1972, Ser. No. 270,954
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 E **5 Claims**



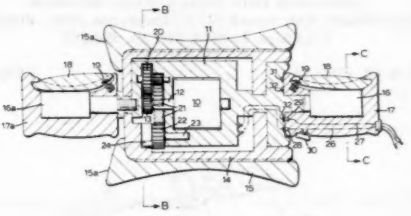
1. A medical monitoring electrode for attachment to external monitoring means, said electrode comprising a soft resilient layer having an aperture therethrough, said layer having on one side thereof a coating of hypoallergenic adhesive for securing said electrode to a patient's skin and having within said aperture a spongy, open-celled foam filled with a conductive electrolyte, a rigid plastic disc adhered to said layer opposite said adhesive coating and overlying said aperture, said open-celled foam being adhesively retained within said aperture, and an electrically conductive snap carried by said plastic disc and extending above the top face thereof for connection with an external monitoring means and being in electrical contact with said electrolyte at the opposite face of said disc.

3,845,758

ROTARY MASSAGER

Stanley R. Anderson, 61 E. Willow Gate, West Hill, Ontario, Canada (M1C 2M7)

Filed Sept. 10, 1973, Ser. No. 395,420
Int. Cl. A61h *7/00*
U.S. Cl. 128—56 **18 Claims**



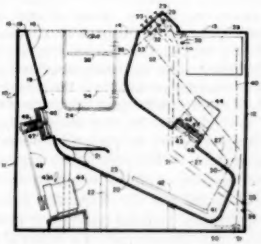
1. A rotary massager comprising first and second coaxially mounted components adapted to rotate relative to each other about a common longitudinal axis of rotation, said axis being the axis of rotation of said rotary massager, handle means rotatably mounted on said first component such that said handle means and said first component are rotatable relative to each other about said common longitudinal axis of rotation, brake means associated with said handle means and coacting with said first component to apply a variable braking force thereto to inhibit rotation of said first component about said common longitudinal axis of rotation relative to said handle means, and means for rotating said second component back and forth about said common longitudinal axis of rotation and simultaneously rotating said first component back and forth about said common longitudinal axis of rotation and relative to said handle means when said brake means is in a position such that it does not entirely prevent rotation of said first component relative to said handle means, said second component having a surface that moves with said second component and that is adapted to contact the skin of a person desiring a massage.

3,845,759

WHIRLPOOL BATH

John Miklovic, 95 Willow Point Rd., Winnipeg, Manitoba, Canada

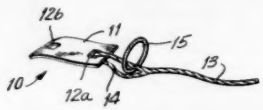
Filed Aug. 24, 1973, Ser. No. 391,308
Int. Cl. A61m *9/00*
U.S. Cl. 128—66 **8 Claims**



1. A whirlpool bath comprising in combination a cabinet, a waterproof plastic shell in said cabinet defining an enclosure within which an occupant may be seated, a seat in said enclosure for said occupant, a hot water supply line communicating

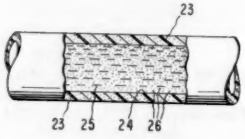
with said enclosure, a cold water supply line communicating with said enclosure, a steam generator in said cabinet and a steam supply line extending from said generator to said enclosure, and at least one agitator propeller assembly for supplying whirlpool action to the water in said enclosure and a source of power for said propeller assembly.

3,845,760
LOOP FOR ERECTING A MALE MEMBER
Joao Birman, Rua Aurora 817 4.°Andar, Sao Paulo, Brazil
Filed Sept. 5, 1973, Ser. No. 394,595
Int. Cl. A61f 5/00
U.S. Cl. 128—79 **4 Claims**



1. A loop for erecting a male member comprising a band, at least one aperture in said band proximate one end thereof, a cord secured to said band proximate an opposite end thereof, and an elastic ring carried by said cord adjacent said band.

3,845,761
INTRAUTERINE CONTRACEPTIVE ANTI-FERTILITY DEVICE FOR THE MANAGEMENT OF REPRODUCTION
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 185,208, Sept. 9, 1971, which is a continuation-in-part of Ser. No. 42,786, June 2, 1970. This application Aug. 17, 1972, Ser. No. 281,445
Int. Cl. A61f 5/46
U.S. Cl. 128—130 **14 Claims**



1. A method of interfering with the reproductive process of a female mammal by continuously administering a contraceptive agent within the uterine cavity of said female over a prolonged period of time by the steps of: (a) inserting into the uterine cavity an intrauterine device comprising a reservoir containing dissolved agent and undissolved replacement agent in a liquid core material permeable to the passage of the agent, the undissolved replacement agent being present in an amount in excess of its solubility in the core and sufficient to maintain the dissolved agent during the prolonged period substantially equal to the amount of dissolved agent originally present in the core, the reservoir confined within an enveloping shape membrane substantially in the shape of a T comprised of a biologically acceptable material insoluble in mammalian body fluid, and formed at least in part of a material permeable by diffusion to passage of said agent at a rate which is lower than the rate of permeability of said agent through said core, (b) releasing said agent from said reservoir into the uterine cavity at a controlled, continuous, contraceptively effective rate by diffusional passage through said shaped membrane, and (c) continuously replacing the dissolved agent released from the reservoir by continuously dissolving said undissolved replacement agent in the core so as to substantially maintain the amount of dissolved drug at its originally present amount.

3,845,762
SYRINGE
Harold S. Cloyd, Erie, Pa., assignor to Nesco Plastics Incorporated, Erie, Pa.
Filed Sept. 24, 1970, Ser. No. 75,121
Int. Cl. A61m 5/22
U.S. Cl. 128—218 P **6 Claims**

1. A syringe consisting essentially of first and second units which may be assembled end to end in either of two modes, namely, a first mode to protect the needle or a second mode as an operative syringe,

the first unit comprising a barrel and needle assembly in which the barrel is open at one end and closed at the other end by a needle hub fixed to the barrel and in which the needle has one end fixed to the hub and communicating with the bore of the barrel and has the other end projecting from the hub for presentation to an injection site,

the second unit comprising a combined needle protector, piston and piston rod having a body which is closed at one end and has a needle receiving recess entering the other end of the body, the closed end of the body having structure acting as a piston making sealing engagement with the bore of the barrel when the closed end of the body is inserted in the barrel, the other end of the body having means for releasably coupling it to the closed end of the barrel with the needle received in said recess, and

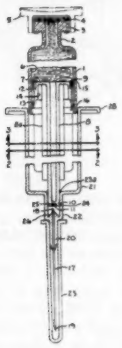
in said first mode of assembly the body serving as a needle protector when coupled to the closed end of the barrel, in said second mode of assembly the closed end of the body being a piston making sealing engagement with the bore of the barrel when the closed end of the body is inserted in the barrel with the other end of the body remote from the closed end of the barrel and the body then being a piston rod for reciprocating the piston.

3,845,763
SYRINGE WITH PUNCTURABLE STEM
Harold S. Cloyd, Erie, Pa., assignor to Nasco Plastics, Incorporated, Erie, Pa.
Filed Feb. 28, 1973, Ser. No. 336,534
Int. Cl. A61m 5/24
U.S. Cl. 128—218 DA **4 Claims**

1. A syringe comprising

1. a barrel for holding a fluid to be dispensed having a bore closed at one end and open at the other end,
2. a piston having a head slidably received in the open end of the bore and movable in one direction to expel fluid from the barrel and provided with an annular flange

flaring outward in said one direction at an acute angle from the head of the piston to the inner barrel wall, the flange in its unstressed condition having its outermost edge thick and non-feathered and of outside diameter greater than the diameter of the bore so the flange is deflected by engagement with the inner barrel wall and the thickness of the flange being great enough, about 0.020 to 0.075 inch, so such mere deflection develops fluid tight sealing pressure under conditions of shock, vibration and temperature encountered during shipment and storage, said piston having a hollow stem of smaller diameter than the head extending from the head out the bore with the end of the stem adjacent the head within and continuously open to the fluid contents of the bore and with the end of the stem remote from the head closed



by a puncturable section, the piston being of flexible synthetic thermoplastic resin indifferent to said fluid,

3. a needle holder having a hub, a double ended hollow needle fixed in and extending through the hub with one end presented to the puncturable section and the other end open for feeding an injection site, a sleeve integral with the hub slidably received on the end of said stem remote from the head permitting movement of the hub to puncture said section by said one end of the needle, the hub of the needle holder and the end of the stem remote from the head having sealing means interengaging as the needle punctures said section to prevent leakage around the outside of the needle.

3,845,764

DEVICE FOR APPLYING MATERIAL TO THE AREA OF THE EYE

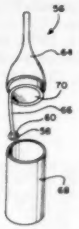
Robert K. Windsor, P.O. 417 Spruce St., Philadelphia, Pa. 19106

Division of Ser. No. 262,384, June 13, 1972, Pat. No. 3,779,245. This application Aug. 3, 1973, Ser. No. 385,615

Int. Cl. A61m 1/00

U.S. Cl. 128—233 **5 Claims**

1. A device to be used for applying materials to the area of the eye comprising an elongated member, gripping means including a container, a mirror, said mirror being supported by said gripping means in spaced relation from said member, said elongated member being supported at one end by said gripping means and having an applying tool at its other end, said applying tool being a suction cup surrounded by a hollow annulus, said annulus having a plurality of apertures therein to permit a liquid to be dispensed therefrom, and conduit means



providing communication between said container and said annulus.

3,845,765

DRAINAGE FLUID REMOVING DEVICE

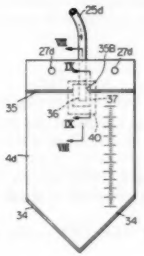
Yukio Ikeda, Tokyo, Japan, assignor to Plus Ika Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 28, 1973, Ser. No. 345,756

Claims priority, application Japan, Mar. 30, 1972, 47-31987

Int. Cl. A61m 1/00

U.S. Cl. 128—277 **5 Claims**



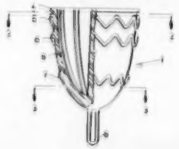
1. In a drainage fluid removing device having a rigid outer vessel, an inner flexible bag with an opening, means for suspending said flexible bag within said outer vessel, a drainage fluid suction tube inserted at one end thereof into said bag, and vacuum-creating means for evacuating the interior of said outer vessel thereby to cause the pressure within the bag to be negative and to draw drainage fluid through said suction tube into the bag: an improvement wherein said bag comprises seal line means fluid-tightly closing said opening of the bag and traversing said one end of said suction tube, a flat bag-shaped net member enclosing said one end of the suction tube, and a flexible flat bag-shaped cover member enclosing said net member and said one end of the suction tube and having an opening providing communication between the interiors of the cover member and the bag, said cover member being fluid-tightly secured to said one end of the tube and to said bag by said seal line means except at an unsealed part around said one end of the tube, whereby the interior of the bag is in communication with the interior of said outer vessel through said unsealed part.

3,845,766

CUP-SHAPED DEVICE FOR THE COLLECTION OF MENSTRUAL FLUIDS AND INTENDED FOR INTERNAL USE

Henry Zoller, Vastra Frolunda, Sweden, assignor to Molnlycke AB, Gotcborg, Sweden

Filed June 11, 1973, Ser. No. 368,837
Claims priority, application Sweden, June 9, 1972, 7659/72
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 6 Claims



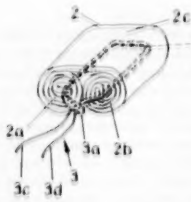
1. A menstrual device intended for internal use and made of a liquid-proof, soft, elastomeric material and which is generally cup-shaped and provided on the outside thereof with annular ribs extending peripherally around the wall of said cup, which ribs are intended to sealingly abut the wall of a vaginal canal when the device is in use to hold said device in position in said canal, characterized in that at least one of the annular ribs extending around the periphery of the wall of the cup has a wave-shape and is spaced from the other said ribs.

3,845,767

TAMPON FOR FEMININE HYGIENE

Axel Friese, Wuppertal, Germany, and Stefan Simon, Modling, Austria, assignors to Dr. Carl Hahn GmbH, Dusseldorf, Germany

Filed Aug. 9, 1973, Ser. No. 387,078
Claims priority, application Germany, Aug. 18, 1972, 2240753
Int. Cl. A61f *13/20*; A61l *15/00*
U.S. Cl. 128—285 38 Claims



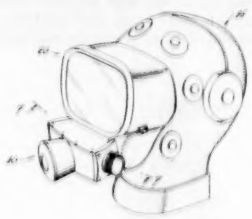
1. A tampon for feminine hygiene which comprises a plurality of rolled members of a unitary continuous absorbent sheet material, said rolled members positioned in juxtaposition side by side to one another and each member having open ends providing means for passing a withdrawl tape axially into and out of each said rolled members, said plurality of rolled members existing together in radially pressed final form shape.

3,845,768

FORM FIT VERTICAL FLOW DIVING HEAD GEAR

Richard Garrahan, 2664 Russmar Dr., San Diego, Calif. 92123

Continuation-in-part of Ser. No. 274,150, July 24, 1974, abandoned, which is a continuation of Ser. No. 99,945, Dec. 21, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 332,046
Int. Cl. A62d *7/00*
U.S. Cl. 128—142.7 8 Claims



1. A custom fitted head gear worn to seal its interior from an ambient medium comprising:

a mask assembly having a rigid peripheral strip configured to continuously conform to the bony contours outlining the facial area and including a first curved portion adapted to conform to an area of the contours of the forehead, second and third curved portions interconnected to said first curved portion adapted to conform to areas of the contours of the regions of the temples, and a fourth curved portion interconnected to said second and third curved portions adapted to conform to an area of the outwardly facing contours of the mandible, all the curved portions are shaped having a width in excess of a plural integral multiple of the thickness of said rigid peripheral strip to present conforming areas of sufficient breadth to ensure the comfortable wearing of said face mask for prolonged periods of time, and a shell portion integrally extending from and reaching across said peripheral strip to define said interior and including a section permitting vision therethrough;

means for allowing a selective exchange of gas to and from said interior mounted on said mask assembly; and

means for elastically pulling said peripheral strip against said bony contours to seat said peripheral stip thereon, sealing said interior from said medium and ensuring said comfortable wearing of said face mask for prolonged periods of time.

3,845,769

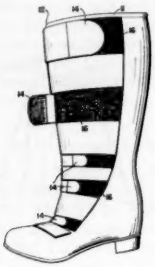
THERAPEUTIC BOOT

Frank D. Shaw, 18 Oak Wood Ln., Rumson, N.J. 07760

Filed Oct. 11, 1972, Ser. No. 296,529
Int. Cl. A61f *13/00*
U.S. Cl. 128—165 9 Claims

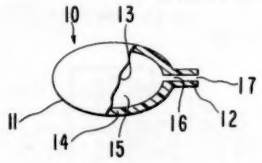
1. A compressive therapeutic limb-encircling device comprising a split sleeve of unyielding flexible material shaped to fit the contour of the limb, a plurality of adjacent bands of mating interlocking fabric material in abutting, non-overlapping contact with each other and in tensionable relation with the sleeve on opposite sides of the split, said bands

being spaced along the length thereof, whereby said sleeve may be compressed and held in unyielding position by the



interlocking of the nap and hook surfaces of the interlocking fabric material.

3,845,770
OSMATIC DISPENSING DEVICE FOR RELEASING BENEFICIAL AGENT
Felix Theeuwes, Los Altos, Calif., and Takeru Higuchi, Lawrence, Kans., assignors to Alza Corporation, Palo Alto, Calif.
Filed June 5, 1972, Ser. No. 259,469
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **15 Claims**



1. An osmotic device for the continuous dispensing of an active agent, said device comprising:

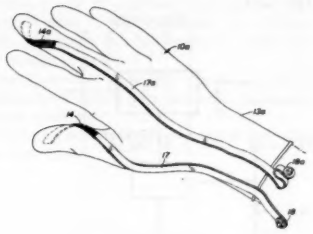
a. a shaped wall formed of a substantially imperforate, semipermeable material that maintains its integrity during the dispensing period and which is characterized by being permeable to the passage of an external fluid in the environment of use and essentially impermeable to the passage of agent with the wall surrounding and forming;

b. a compartment containing an active agent that is soluble in the external fluid, and which agent exhibits an osmotic pressure gradient across the wall against the external fluid to internally pressurize the compartment in the environment of use;

c. an osmotic passageway positioned in the imperforate wall and extending therethrough with the passageway communicating with the compartment and the exterior of the device, said passageway designed and sized for osmotically pumping the agent through the passageway from the device; and

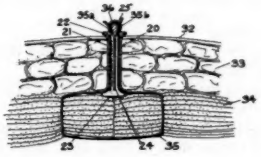
d. wherein in operation with the device in the environment of use, the external fluid from such environment is continuously imbibed through the wall into the compartment in tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall thereby continuously dissolving the agent which in turn is then pumped under pressure from the device through the passageway at a controlled rate over a prolonged period of time.

3,845,771
ELECTROSURGICAL GLOVE
William Michael Vise, 3440 Olentangy River Rd., Columbus, Ohio 43210
Filed Apr. 24, 1973, Ser. No. 353,977
Int. Cl. A61n *3/00*
U.S. Cl. 128—303.13 **2 Claims**



1. An electrosurgical glove comprising a thin, fluid impervious sheath of flexible, dielectric material formed with integral hand and plural digit - receiving portions; a flexible electrode unitarily secured on at least one of the digit-receiving portions of said sheath in a position to normally make electrical contact with a surgical instrument grasped by the digits of a human hand occupying said sheath, said electrode including a thin, substantially flat strip of a readily flexible, electrically conductive material, having an outer coating of a flexible, electrically conductive adhesive; and a flexible, electrically insulated lead adhesively secured to said sheath and electrically joined at one end thereof with said electrode and having an opposite end disposed in remote relation to said electrode and arranged for connection with a source of electrical energy.

3,845,772
RETENTION SUTURE DEVICE AND METHOD
Dean B. Smith, 20 S. Park St., Madison, Wis. 53715
Filed Sept. 17, 1973, Ser. No. 397,878
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **9 Claims**

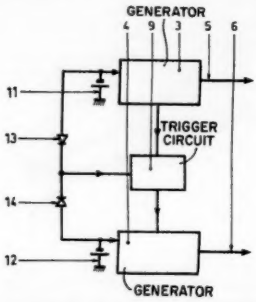


1. A device insertable in a surgical incision for use with a rentention suture which is looped around an incision in a deep tissue layer comprising:

a. an elongate hollow tube adapted to be inserted into said surgical incision above said deep tissue layer, said tube having a bottom end and a top end, the bore of said tube being sufficiently large to receive the two end portions of said suture therethrough; and

b. means at the top end of said tube for retaining said end portions of said suture and preventing same from being retracted through said tube.

3,845,773
CARDIAC STIMULATORS
Guy Hugues Fontaine, and Alain Ribot, both of Paris, France, assignors to Association de Recherche et D'Entraide Cardiologiques et Angeiologiques, Paris, France
Filed July 7, 1972, Ser. No. 269,724
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 3 Claims



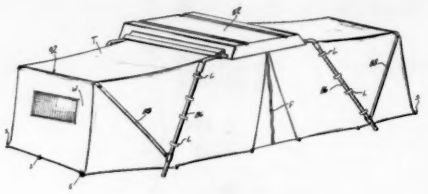
1. A cardiac stimulator for a muscle comprising:
a single source of electrical energy;
a single generator connected to said source operable to produce electrical impulses of a frequency equal to the cardiac rate to be stimulated;
a pair of electrodes adapted to be in contact with the muscle to be stimulated;
switching means connected to said electrodes and to said single generator operable to send said impulses alternatively to each of said electrodes;
and,
resistive means connected between said switching means and one electrode of said pair of electrodes to reduce amplitude of an impulse on said one electrode while not changing said frequency.

3,845,774
PROCESS FOR CURING TOBACCO
Tien C. Tso, 4306 Yates Rd., Beltsville, Md. 20705; Richie H. Lowe, Rt. 4, Box 277, Nicholasville, Ky. 40356, and Donald W. Dejong, 1901 Hillock Dr., Raleigh, N.C. 27612
Continuation-in-part of Ser. No. 166,963, July 28, 1971, abandoned. This application Jan. 31, 1973, Ser. No. 328,204
Int. Cl. A24b 15/00
U.S. Cl. 131—140 C 7 Claims

1. A process for curing tobacco comprising the steps of:
a. providing uncured tobacco leaves;
b. homogenizing the leaves in the presence of a 7.0 percent aqueous ethanol solution;
c. incubating the homogenized leaves for up to about 168 hours at a temperature of from 25°C. to 80°C; and
d. drying the incubated homogenate.

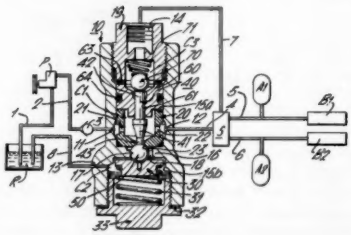
3,845,775
CAR TOP TENT
Paul R. Norris, Stone Mountain; Frank Van Haltern, Jr., Atlanta, and David K. Walz, Stone Mountain, all of Ga., assignors to Olin Corporation, New Haven, Conn.
Filed June 7, 1973, Ser. No. 367,907
Int. Cl. A45f 1/16
U.S. Cl. 135—1 A 12 Claims

1. A tent structure comprising:
a. a first rigid portion for supporting tent fabric to form at least a portion of a roof of the tent;
b. a plurality of first poles hingedly connected to said rigid portion, said first poles being hinged for movement between a storage position adjacent said rigid portion and an erected position wherein said first poles are operative to support said rigid portion above the ground; and



c. a plurality of second poles having hinge means connected to said first poles whereby said second poles are mounted on said first poles for movement between a storage position adjacent said first poles and an erected position wherein said second poles extend laterally from said first poles and upwardly from said hinge means.

3,845,776
UNLOADER VALVE
Atsumi Ueda, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Dec. 20, 1972, Ser. No. 316,819
Claims priority, application Japan, Dec. 24, 1972, 47-3524; Sept. 22, 1972, 47-95394
Int. Cl. G05d 16/10
U.S. Cl. 137—116 9 Claims



1. In an unloader valve for hydraulically controlled systems having a hydraulic circuit connecting a hydraulic pressure source with an accumulator for an actuator, comprising
a housing provided therein with a first pressure chamber interposed between said pressure source and said accumulator and a second pressure chamber connected with a reservoir;
a ball valve for opening and closing the communication between said first and second pressure chambers;
a support member hermetically inserted within the interior of said housing and forming said first pressure chamber at one side thereof and a third pressure chamber at the other side thereof, said third pressure chamber being connected with said accumulator;
a valve spool for controlling the open-and-close operation of said ball valve and including a small diameter portion axially slidably engaged within the said support member and a large diameter portion exposed in said first pressure chamber, said small diameter portion extending integrally from said large diameter portion, being larger in diameter than a valve seat of said ball valve, and being exposed in said third chamber at its one end;

a ball housed within said third pressure chamber and biased toward said end of said small diameter portion of said valve spool by pressure accumulated within said accumulator; and

a ball receiver for receiving said ball thereon and formed at the end face of said support member within said third pressure chamber, the improvement comprising said ball receiver having a larger diameter than that of said small diameter portion of said valve spool, whereby the valve spool is swiftly operated to effect pressure accumulating operation.

3,845,777

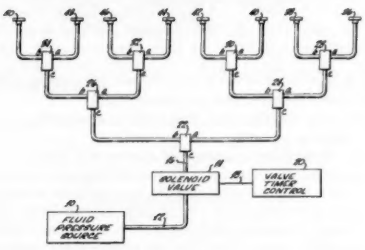
BISTABLE FLOW CONTROL VALVE

Paul R. Gilson, 10012 Highcliff Dr., Santa Ana, Calif. 92705

Filed May 25, 1973, Ser. No. 364,038

Int. Cl. F16k *11/00*

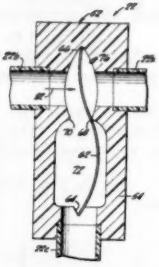
U.S. Cl. 137—119 7 Claims



1. A bistable fluid valve, comprising:

a housing having an inlet and first and second outlets;

a flexible reed mounted within said housing and biased axially to bow within said housing in either of first and second directions;



means responsive to fluid pressure at said inlet for changing the direction of bow of said reed; and

means responsive to said reed for closing said first or second outlet in response to said reed being bowed in said first or second direction, respectively.

3,845,778

AUTOMATIC DRAIN VALVE

Robert J. Bridigum, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Dec. 13, 1973, Ser. No. 424,412

Int. Cl. F16t *1/14*

U.S. Cl. 137—204 7 Claims

1. An automatically operative drain valve device for expelling contaminants from a fluid pressure storage reservoir to atmosphere, said drain valve device comprising:

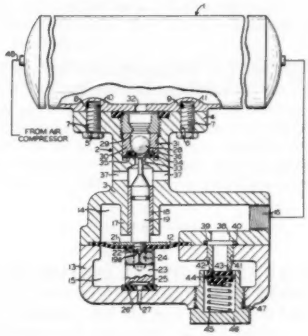
a. a casing having a passageway extending therethrough via which contaminants may be expelled from the interior of the reservoir to atmosphere,

b. a cover member secured to said casing,

c. a movable abutment having its outer periphery disposed between said casing and said cover member, said abutment cooperating with said casing and said cover member to form a pair of chambers disposed on the respective opposite sides of said abutment, one of said chambers being constantly in communication with the interior of the storage reservoir,

d. a biased one-way flow valve means providing for flow of fluid under pressure from said one chamber to the other of said chambers,

e. a restricted communication between said other chamber and atmosphere,



f. a first valve means operable by said abutment to control flow of contaminants from the storage reservoir to atmosphere via said passageway in said casing, and

g. a second valve means operable by said abutment to control flow of fluid under pressure from said other chamber to atmosphere via said restricted communication,

h. said abutment being responsive to a chosen reduction of the pressure in said one chamber below that in said other chamber to simultaneously operate said first and second valve means to respectively cause expulsion of contaminants from said storage reservoir to atmosphere via said pasageway and release of fluid under pressure from said other chamber to atmosphere via said restricted communication until the pressure in said other chamber is less than that in said one chamber whereupon said abutment is rendered effective to cause said first valve means to terminate said expulsion of contaminants and said second valve means to terminate the release of fluid under pressure from said other chamber.

3,845,779

GARDEN HOSE EVACUATING DEVICE

Henry E. Greene, Jr., Wilmette, Ill., assignor to Waldon Devices, Inc., Wilmette, Ill.

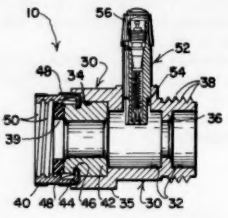
Filed May 10, 1973, Ser. No. 359,117

Int. Cl. F16k *51/00*

U.S. Cl. 137—209 5 Claims

1. A pneumatic fire hose attachment for pressurizing the interior of a section of fire hose to rigidify the same to the end that the rigidified section may be projected endwise over a sheet of surface ice for rescue purposes, said attachment comprising a tubular body having a front end and a rear end, and a longitudinal bore therein, a transverse partition wall

extending across the bore and thus defining a first internal chamber having an open rim at one end of the body and a second internal chamber having an open end at the other end of the body, a series of threads on each end of the body and designed for threaded engagement with the adjacent end of a fire hose section, said body being provided with a pair of radial bores, one on each side of said partition wall, and in communi-



cation with said first and second chambers respectively, and a check valve for supplying air under pressure to each of said chambers for conduction through the open rim thereof to the adjacent fire hose section, each check valve including an air inlet tube sealingly disposed within the associated radial bore and having its outer end designed for reception thereover of an air injection fitting associated with a source of compressed air.

3,845,780

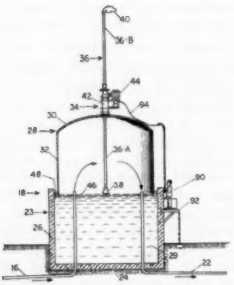
PRESSURE REGULATING MEANS FOR GAS STORAGE TANKS INCLUDED IN SEWERAGE SYSTEMS

Octavian Cardas, 1001 Pine St., San Francisco, Calif. 94109

Filed Apr. 25, 1974, Ser. No. 463,893

Int. Cl. F16k *17/12*

U.S. Cl. 137—251 **9 Claims**



1. A gas pressure regulator for use with a gas storage tank of the type which includes a dome formed with a roof floating in a liquid filled container at a level dependent upon the pressure of gas therewithin, said pressure regulator including.

a vent pipe extending through the roof of the dome and having a downwardly extending lower portion inside the dome and an upwardly extending upper portion outside the dome,

means forming a gas outlet at the upper pipe portion,

means forming a gas inlet at the lower portion of the vent pipe submerged in the liquid of the liquid-filled container in a lowered dome position and open to the dome gas in a raised dome position, and

power operated actuating means for raising and lowering the gas inlet means at the lower portion of the vent pipe to control the dome height above which venting is effected.

3,845,781

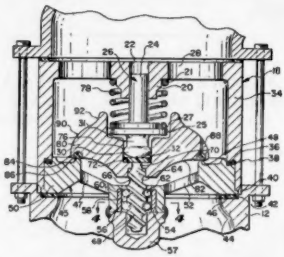
CHECK VALVE FOR PULSATING FLOWS

Charles C. Hansen, Hinsdale, and John D. Nilles, Roselle, both of Ill., assignors to Refrigerating Specialties Co., Broadview, Ill.

Filed Mar. 22, 1972, Ser. No. 236,932

Int. Cl. F16k *29/00, 15/06*

U.S. Cl. 137—331 **17 Claims**



1. A reciprocable valve for conduits conducting a pulsating fluid under pressure the combination of,

a housing member including a planar downstream valve seat defining a port,

a valve member opening and closing said port,

means for directing opening and closing movements of said valve member with respect to said port having rolling contact with a curvilinear path having lineal and rotational components throughout its length and a helix angle greater than 30° within an approximate range of 15° above said 30°,

said valve member having a natural frequency with a reversing rotational motion along said path of less than one-half the natural frequency of its lineal movement frequency without the rotational motion, and

resilient means urging said valve member along said path to its closed position in a direction opposite to the flow of said fluid through the valve.

3,845,782

FLOW CONTROL VALVE FOR HYDRAULIC DAMPER AND THE LIKE

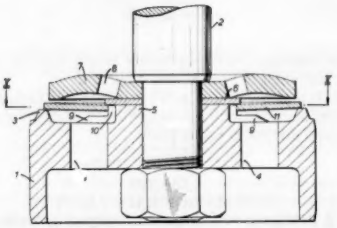
Lawrence George Nicholls, and David William Gee, both of Tyseley, England, assignors to Girling Limited, Birmingham, England

Continuation of Ser. No. 206,641, Dec. 10, 1971, abandoned. This application July 23, 1973, Ser. No. 381,540

Claims priority, application Great Britain, Dec. 14, 1970, 59376/70

Int. Cl. F16k *15/08*

U.S. Cl. 137—493 **8 Claims**



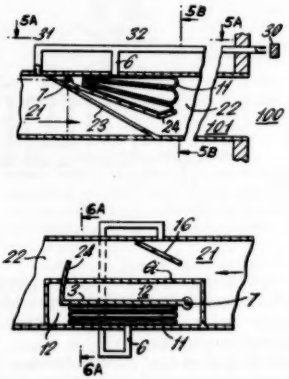
1. A fluid flow control valve comprising a pair of oppositely directed annular valve seats, a flexible annular valve having an inner periphery normally engaged with one said valve seat and an outer periphery normally engaged with the second said

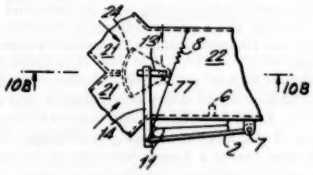
valve seat, said valve member being capable of flexing to lift off one or the other of said valve seats according to the direction of an axially applied pressure; a central guide member extending through said annular valve member, said guide member having means defining axially extending recesses in its outer periphery to form flow passages for the flow of fluid through said valve when said valve member is displaced from said one valve seat, and wherein each of said passages has a cross-sectional area at least as great as the area of the radial entrance thereto at the upstream side of said valve in all operational positions of said valve member, and an outwardly projecting annular flange spaced from said one valve seat to form a stop for said inner periphery of said valve member in a fully open condition thereof, said flange having recesses formed therein as a continuation of said passages and having an axial extent at least as great as the maximum axial travel of said inner periphery of said valve member.

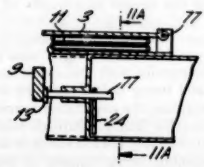
3,845,783
BAG DIAPHRAGMS AND BAG DIAPHRAGM OPERATED AIR DAMPERS

Guido A. De Lepeleire, Heverlee, Belgium, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 166,954, July 28, 1971, Pat. No. 3,804,364. This application May 10, 1973, Ser. No. 359,073
Int. Cl. F15d *1/02*; **F24f** *13/10*; **F16k** *21/04*; **G05d** *7/01*
U.S. Cl. 137—504 **11 Claims**





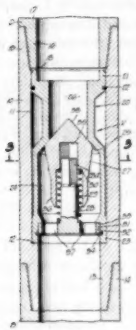


1. A pneumatically operated valve assembly comprising first and second rigid plate members mounted for movement relative to each other and being in oppositely facing relation to each other, conduit means surrounding said plate members, guide means for guiding the movement of one of said members relative to the other of said members, bag means sandwiched between said plate members, said bag means having first portions thereof fixedly secured to said plate members and second portions thereof extending between said plate members, said second portions being characterized by the absence of any significant bending resistance, and aperture means in said first plate member for admitting and exhausting air to and from said bag means to adjust the position of said second plate member relative to the position of said first plate member, said second plate member being pivotally mounted relative to said conduit means, air passage means extending externally of said conduit means from the upstream side of said plate members to said aperture means, said second plate member being movable to control the flow of air through said conduit means.

3,845,784
FLOAT VALVE FOR DRILL STRINGS

Wayne N. Sullivan, Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Continuation of Ser. No. 818,261, April 22, 1969, abandoned. This application Mar. 30, 1971, Ser. No. 129,592
Int. Cl. F16k *15/02*
U.S. Cl. 137—515 **7 Claims**



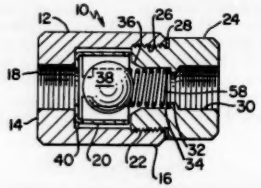
1. In a drill pipe float valve assembly having a valve body provided with portions adapted to be engaged in the bore of a drill dollar sub, an upwardly tapered valve seat in said body, a flow passage circumscribed by said seat, a valve head below said seat and having an axial cavity in one end and a valve surface on the other end complementally engageable with said valve seat, said valve head being reciprocable in said body between a closed position whereat said surface is engaged with said seat and an open position displaced downwardly from said seat, a valve stem extending into said cavity and supporting said head for slidable reciprocation thereon, a spring disposed about said stem and acting on said head to bias the same into said closed position, and a spider supported in said body and retained in place therein, said spider mounting said valve stem, said valve head being movable from said closed position to said open position in response to downward flow of drilling fluid through said flow passage, the improvement wherein said stem and said cavity are of corresponding noncircular cross-section to prevent spinning of said valve head on said valve stem when said valve head is moved to said open position in response to downward flow of drilling fluid through said flow passage.

3,845,785

SPRING BIASED SAFETY VALVE

Jack A. McMath, Fort Thomas, Ky., assignor to Dover Corporation, New York, N.Y.

Division of Ser. No. 137,171, April 26, 1971, Pat. No. 3,734,115. This application May 10, 1973, Ser. No. 358,834
Int. Cl. F16k 17/30
U.S. Cl. 137—517 1 Claim



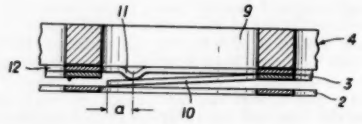
1. A safety valve normally biased in the open condition in the absence of a predetermined pressure differential condition and operational to a closed condition in response to the predetermined condition, the valve comprising in combination: a housing having an inlet and an outlet and a bore therethrough connecting the inlet and outlet, a guide mounted in said bore, said guide having parallel arms extending downstream from said inlet to define a raceway and being connected at one end by an end plate in substantially U-shaped manner, said raceway having an open end downstream of said inlet, said end plate having an aperture therethrough and being aligned with said inlet, a closure ball mounted for axial movement along said raceway, ball engaging shoulders projecting from said parallel arms adjacent the end plate to prevent said ball from obstructing the end plate aperture in the open condition, a valve seat surface formed upstream of said outlet and in close proximity to the open end of said guide, said valve seat surface receiving said closure ball in sealing engagement in the valve closed condition to stop flow therethrough, a spring axially mounted in said bore between said ball and said outlet, said spring acting against said ball to urge said ball upstream along said raceway and out of engagement with said valve seat surface in the open condition wherein flow occurs therethrough and whereby said ball is urged downstream to overcome the force of said spring and engage said valve seat surface in response to a predetermined pressure differential condition occurring between said inlet and said outlet.

3,845,786

DISC OR PLATE VALVE FOR PISTON-TYPE COMPRESSORS

Joseph Papst, deceased, late of Vienna, Austria (by Stephanie Papst), and Brigitte Brockmuller, nee Papst, Kirkland, Montreal, Canada (sole beneficiaries), assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna XI, Austria

Filed June 22, 1973, Ser. No. 372,585
Int. Cl. F16k 15/08
U.S. Cl. 137—535 6 Claims



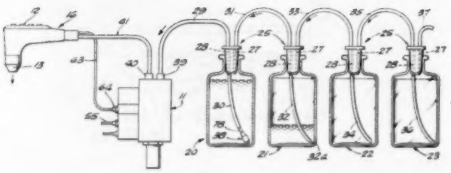
1. A disc or plate valve for piston-type compressors having a valve seat, a valve stop spaced from the valve seat, a closing member mounted for movement between the valve seat and the valve stop, a spring plate mounted between the closing member and the valve stop and having at least one spring tongue bent out of the plane of the spring plate for urging the closing member into sealing engagement with the valve seat, and abutment means disposed between the valve stop and the spring plate, the abutment means being adapted to meet a corresponding spring tongue at a point spaced from the free end of the tongue when the valve is in a partly open position, thereby preventing the spring tongue from being bent back into the plate of the spring plate, and increasing the stiffness of the spring tongue when meeting with the corresponding abutment means.

3,845,787

LIQUOR SUPPLY FOR AN AUTOMATED LIQUOR DISPENSING SYSTEM

William E. Slagle, Barrington, Ill., assignor to Lincoln Hall Research Co., Lincolnwood, Ill.

Continuation of Ser. No. 193,137, Oct. 27, 1971, abandoned. This application May 17, 1973, Ser. No. 361,342
Int. Cl. B65d 47/00, 51/16
U.S. Cl. 137—571 1 Claim



1. In a liquid storage system including a plurality of bottles intercoupled in an airtight series between an inlet that is open to atmosphere and an outlet coupled to a dispensing pump, a stopper assembly comprising:

a stopper formed of hard material having a body with an elongated frusto-conical configuration, a circumferential flange on the relatively wide end of said body, inlet and outlet openings extending lengthwise through said body, a fitting for a suction tube on the relatively narrow end of said body and communicating with the inlet end of said outlet opening, and a pair of fittings at the wide end of said body and communicating with respective ones of said openings;

and an adapter formed of relatively resilient material and having a frusto-conical sleeve configuration, said adapter being of such size as to fit over said stopper body with the wide end of said adapter engaging said flange;

said body also having a lateral protusion at its relatively narrow end for retaining said adapter in place;

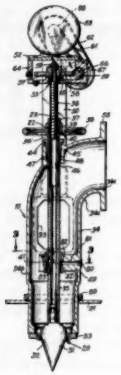
whereby said stopper assembly can be fitted in airtight relationship into the mouth of any one of various sized bottles;

wherein said stopper includes a disc-shaped member secured to the flanged end of said body, said pair of fittings being formed integrally with the outer surface of said member and each being radially spaced from the axial center of said member, the associated openings extending from their respective fittings through said disc-shaped member and then radially inward towards each other, the openings in said body being parallel to each other and aligned with the inner ends of the openings in said disc-shaped member.

3,845,788
MOTOR CONTROLLED VALVE FOR CONTINUOUSLY FEEDING VISCOUS LIQUIDS

Thomas R. Laven, Hamilton, Ohio, assignor to The Western States Machine Company, Hamilton, Ohio

Filed Oct. 3, 1973, Ser. No. 403,071
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **8 Claims**

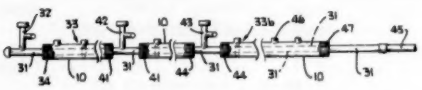


1. A valve for controlling the delivery of a stream of viscous material, comprising:
- an elongated valve body having an inlet at one end and a circular outlet orifice at the other end;
- a conical needle means supported on an elongated valve stem means, said needle means being disposed in said orifice and movable axially relative thereto to close the orifice or to define an annular gap for outflow of a stream of said viscous material;
- threaded drive nut means fixedly associated with said valve stem means;
- rotatable lead screw means in threaded engagement with said drive nut means;
- drive transmission means for rotating said lead screw means to move said valve stem means axially of said valve body; and
- maually operable means for rotating said drive nut means relative to said lead screw means independently of said transmission means.

3,845,789
SUB-SURFACE GAS MAIN REPLACEMENT METHOD

Carl H. Rohrer, 1501 Hale Ave., Ft. Wayne, Ind. 46804

Filed Oct. 30, 1972, Ser. No. 302,053
Int. Cl. F16l *55/12*
U.S. Cl. 138—97 **4 Claims**

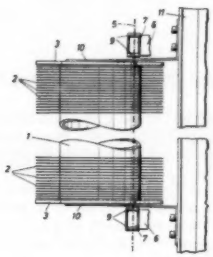


1. A minimum service shut-down method for replacing sub-surface gas mains of the type having service lines connected at spaced locations along the gas mains, said method including: initially obtaining access to each end of predetermined length section of the main having a plurality of service lines connected to it, providing said section with a gas supply independent of its junction with adjoining portions of the main, subsequently isolating said section from adjoining portions of the main, then inserting within said main section a generally coextensive section of smaller-diameter replacement tube and connecting said tube to a source of pressurized gas supply, subsequently disconnecting less than all of said plurality of service lines from said main section and reconnecting them to said replacement tube with said reconnected service lines being supplied with gas from said replacement tube and the remainder of said service lines being supplied with gas from said main section, subsequently disconnecting said remaining service lines from said main section and reconnecting them to said tube, and finally removing said gas supply from said main section leaving all of said service lines supplied with gas by said replacement tube.

3,845,790
FILLING THREAD TENSIONING MEANS

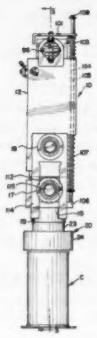
Walther Filter, Langenhagen, and Claus Filter, Rethem/Aller, both of Germany, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Establissement Wanderfield & Co., Schaan, Liechtenstein

Filed Sept. 7, 1973, Ser. No. 395,293
Claims priority, application Austria, Sept. 15, 1972, 7914/72
Int. Cl. D03c *47/00*
U.S. Cl. 139—194 **9 Claims**



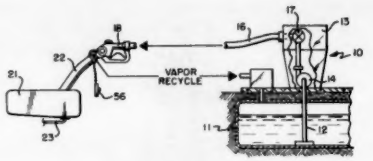
1. In a flat weaving machine which is operable to form a shed terminating at a fell of a cloth, to enter a filling thread into said shed along a predetermined line, to cut off said filling thread, and to beat up said filling thread against said fell, said machine comprising an intermittently rotatable reed roller consisting of a reed shaft and a multiplicity of discs corotationally mounted on said reed shaft and formed with thread-engaging edge portions which are adpated thus to beat up successive filling threads against said fell as said reed roller is intermittently rotated in a predetermined direction, the provision of tensioning means for maintaining the tension of said filling thread as it is beaten up, said tensioning means comprising
- two stationary spring tongues, which are disposed at opposite ends of said reed roller and bear on the outer end faces of those of said discs which are disposed at said opposite ends of said reed roller, said tongues being adapted to clamp opposite end portions of said filling thread against said outer end faces when said filling thread has been cut off, and
- two thread tensioners disposed adjacent to opposite ends of said reed roller and comprising backing means disposed adjacent to said predetermined line, said tensioners being pneumatically operable to force said filling thread against said backing means when, and only when, said filling thread has thus been entered into said shed.

3,845,791
UNIVERSAL FILLING HEAD
Kenneth Francis Montague Friendship, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 80,895, Oct. 15, 1970, Pat. No. 3,720,242. This application Mar. 12, 1973, Ser. No. 340,625
Int. Cl. B67c 3/06
U.S. Cl. 141—6 18 Claims



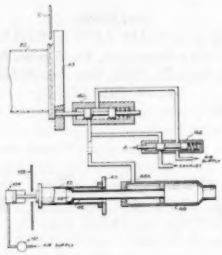
1. In a container filling machine, a filling head which comprises:
- a hollow cylindrical housing having a downwardly opening, upper housing member and a lower housing member in sliding telescoped relation within the upper housing member;
- a sealing bell mounted on the lower end of said lower housing member which is adapted to be brought into sealing engagement with the mouth of a container positioned in vertical alignment beneath the same when the housing member is lowered;
- a hollow liquid product distributor mounted in said lower housing member which has a passageway connecting with a product inlet port for directing a liquid product through said lower housing member and into said container;
- a fluid product supply line connected to said product inlet port, a device in said supply line immediately adjacent said inlet port for creating extreme turbulence and high pressure drop;
- a product feed valve assembly having a body member mounted in said product distributor for axial movement between valve opening and closing positions so as to control the entry of the product into said container;
- a piston having an upper and a lower surface and mounted for axial sliding movement in said lower housing member and connected to said feed valve body member;
- resilient means biased to normally hold said feed valve body member in valve closing position;
- means for supplying counterpressure to the lower surface of said piston which is operative to pressurize said container and to move said product feed valve to open position;
- piston operating means for conducting a fluid from a control pressure supply means to a space above said piston to press against the upper surface of said piston;
- a control valve for said piston operating means; and
- means actuated upon the filling of the container to a predetermined level to operate the control valve for said piston operating fluid means whereby said product feed valve is moved to closed position.

3,845,792
FUEL-DISPENSING NOZZLE SEAL
Everett M. Johnson, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Oct. 24, 1972, Ser. No. 300,076
Int. Cl. B65b 31/06; B67d 5/372
U.S. Cl. 141—46 6 Claims



1. A dispensing nozzle for transferring a volatile liquid from a pressurized source thereof, to a tank having a filling spout, said nozzle including a discharge tube defining an internal flow passage having an outlet at one end thereof, said tube being adapted to be removably registered within said filling spout, and manually operable valve means actuable to regulate liquid flow between the pressurized liquid source and said tank, the improvement therein of;
- a resilient walled inflatable member carried on the outer surface of said nozzle discharge tube to be radially expanded into engagement with contiguous wall of said filling spout to form a substantially fluid-tight annular seal therewith,
- a transfer conduit communicating said inflatable member with said nozzle discharge tube at a junction point, for directing a stream of said volatile liquid into said inflatable member when said valve means is actuated to the open position, whereby to initiate liquid flow through said discharge tube, and
- means communicating with said tank to receive vapors from the latter when liquid is urged thereinto.

3,845,793
MACHINE FOR FILLING LUNCHEON DOUGH INTO MOLD CANS
Paul F. Good, Lutherville, Md.
Division of Ser. No. 40,135, May 28, 1970, Pat. No. 3,688,682. This application May 3, 1972, Ser. No. 240,599
Int. Cl. B65b 3/14
U.S. Cl. 141—67 3 Claims



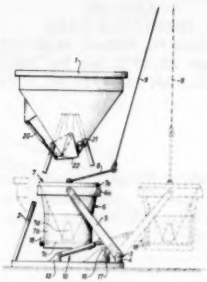
1. A stuffing horn for filling a mold with food comprising an outer tube and an inner tube to form a telescopic horn for passage of food under pressure said inner tube extending beyond one end of said outer tube, said inner tube being spaced inwardly from said outer tube, sealing ring means mounted on said inner tube at its end within said outer tube

slidably engaging the inner surface of said outer tube, and bearing means at the end of the outer tube surrounding said inner tube to slidably support said inner tube, whereby said inner tube may be telescopically extended into a mold to be filled and retracted from said mold as the food passes through the stuffing horn into said mold under pressure.

3,845,794
FILLING SYSTEMS

Erik Rune Folde, Forshagagatan 14, 123 48 Farsta, Sweden

Filed Feb. 17, 1972, Ser. No. 227,101
Claims priority, application Sweden, Feb. 19, 1971, 2172/71
Int. Cl. B65b *1/30, 3/26*
U.S. Cl. 141—83 **19 Claims**



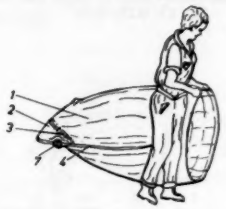
1. A filling system for automatically filling a transport container with material from a storage container having a support frame, the transport container being placed in a holder located in a first position substantially externally of the support frame of the storage container, drive means for moving the holder and the transport container both from said first position to a second position located substantially within said support frame and beneath a discharge opening in the storage container and from said second position to said first position, means responsive to the positioning of said holder in said second position for actuating the opening and closing of the discharge opening of the storage container to cause the transport container to be filled with a predetermined amount of said material, load sensing means responsive to filling the transport container for causing said drive means to return the filled container and the holder to its first position, the holder being supported on one end of at least one arm, the other end of said arm being pivotally connected to said frame of said storage container, the drive means being connected to the arm and said frame to drive said arm between the first and the second position and vice versa.

3,845,795
DEVICE FOR PRESSING AIR INTO INFLATABLE ARTICLES

Bror Elis Andreasson, Bangatan 21, S-462 00 Vanersborg, Sweden

Filed Nov. 8, 1972, Ser. No. 304,655
Claims priority, application Sweden, Nov. 23, 1971, 14962/71; Oct. 17, 1972, 13349/72
Int. Cl. B65b *3/14, 3/16, 3/17*
U.S. Cl. 141—313 **14 Claims**

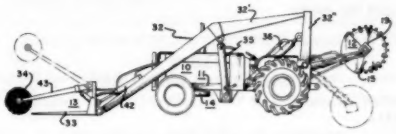
1. An improved device for pressing air into inflatable articles, said device comprising a larger air container having resilient walls and means defining an opening therein receptive of air for filling same; and a smaller air container having resilient walls and compressible during use to discharge air therefrom, a valve housing connected to said larger air container and said smaller air container means defining a chamber in said valve housing for passage therethrough of pressurized air, means defining an outlet port in said valve housing for said pressurized air, a first valve in said valve housing positioned between the larger air container and said valve chamber, and a second valve in said valve housing positioned between said valve chamber and said outlet port, both said valves being non-return valves opening only in the direction towards said outlet and said smaller air container being connected to said chamber between said valves.



3,845,796
ROOT CUTTER

Calvin K. Moore, RT. 1, Boise, Idaho 83702

Filed June 14, 1973, Ser. No. 370,061
Int. Cl. B27c *9/00*
U.S. Cl. 144—1 R **2 Claims**



1. A root cutter to be carried on a stump clearing vehicle, comprising:

an upstandingly disposed circular blade mounted at its center to and driven by a gear box;

a multiplicity of cutting bits fastened radially on each side of and projecting from the outer circumferential edge of said blade;

cutter carrying arms fastened at one of their terminal ends to said gear box and at their ends opposite pivotally to said vehicle chassis, said carrying arms being pivotally mounted to articulate vertically and sidewardly and having hydraulic cylinders fastened between said vehicle chassis and said carrying arms to accomplish said articulation;

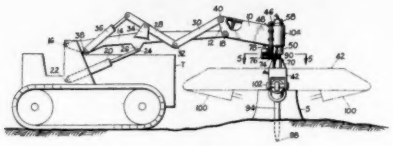
means for providing mechanical power to said gear box to rotate said blade; and

a sweeper lift assembly including a pair of lift arms pivotally fastened at each of the terminal sides of and distally from the rearwardmost terminal end of said vehicle chassis, said lift arms having means for selectively lifting said arms, and lift forks including an upstanding, transversely disposed wall fastened to the forwardmost terminal ends of said lift arms and a plurality of rectilinearly horizontally parallel tine bars fastened to said upstanding wall and a detachable panel slidably engageable with said lift arms.

3,845,797
STUMP SPLITTER

Raymond H. Bartlett, 604 N. Overlook Dr., Vancouver, Wash. 98665

Continuation-in-part of Ser. No. 333,968, Feb. 20, 1973, abandoned. This application Aug. 9, 1973, Ser. No. 387,178
Int. Cl. B27c 9/00
U.S. Cl. 144—2 N 11 Claims

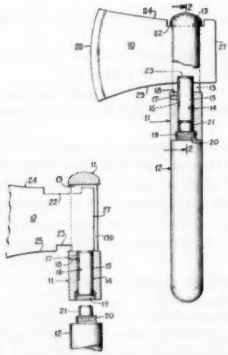


1. A stump splitter comprising
a. an elongated supporting frame having a substantially full length straight line configuration and having opposite ends,
b. means arranged to support said frame on a supporting vehicle,
c. a pair of arms pivotally supported in suspended relation on said frame,
d. said arms having opposed splitting blade edges with substantially the full length of the edges being disposed in a plane below the lowest point of the supporting frame,
e. and operating means for pivoting said arms,
f. said operating means being arranged to pivot said arms apart so that the latter can straddle a stump and also being arranged to pivot said arms forcefully together to split the stump.

3,845,798
DISASSEMBLABLE HATCHET

Salvatore Palumbo, 160 Glascoe Ave., Staten Island, N.Y. 10314

Filed Sept. 10, 1973, Ser. No. 395,979
Int. Cl. B26b 23/00
U.S. Cl. 145—2 R 8 Claims

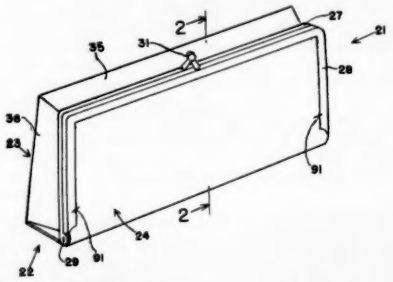


1. A disassemblable hatchet comprising:
a hatchet head having a blade edge, a blunt end, and top and bottom edges, said top and bottom edges each having a notch formed therein intermediate said blade edge and said blunt end and in alignment with each other;
an upper handle part having an axial slot in the upper portion thereof and an annular, axial chamber in the lower portion thereof, said slot and said chamber communicating with each other;
a cylindrical lock pin slideably seated in said annular chamber;
means to maintain said lock pin within said chamber; a lower handle part; and,
means for securing said upper handle part and said lower handle part to each other such that said lock pin engages and becomes seated in the notch in said lower handle part, is slid upwardly thereby in the lower edge of said hatchet head in firmly and securely locking said hatchet head to said upper handle part.

3,845,799
SPECTACLE CASE

Peter Mittell, 262 Main St., Milford, Mass. 01757

Filed Sept. 28, 1972, Ser. No. 293,112
Int. Cl. A45c 11/04, 13/04, 13/06
U.S. Cl. 150—29 16 Claims



1. A case for small objects comprising:
receptacle means for receiving the object and including a unitary rigid board member having cut therein a hinge score to facilitate relative movement between a base portion and a cover portion, said base portion defining a bottom wall, a front wall, a pair of sidewalls and a rear wall joined to said cover portion by said hinge score, said side and front walls having scores adjacent outer peripheries that define outwardly folded tabs; and
a frame comprising a pair of U-shaped channels, hinges joining the ends of said channels; and closure means for releasably securing together said channels, said channels facing inwardly and receiving said tabs and the peripheral edges of said cover portion whereby said base portion is secured to one of said channels and said cover portion is secured to the other one of said channels.

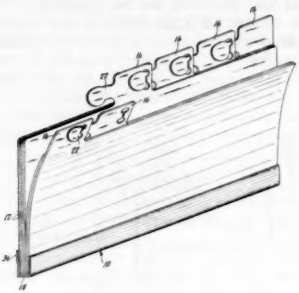
3,845,800
MULTI-COMPARTMENT WALLET

Gordon D. Lookatch, 6200 N. Sunny Point Rd., Glendale, Wis. 53217

Filed June 7, 1973, Ser. No. 367,772
Int. Cl. A45c 11/18
U.S. Cl. 150—39 9 Claims

1. A multi-compartment wallet comprising a plurality of aligned, abutting rectangular sheets of flexible materials, said sheets being joined along one of the longer edges to form a plurality of compartments for receiving thin objects; and a plurality of adjacent interlocking tabs, one such tab being mounted on the other longer edge of each of said sheets in a serial arrangement, said tabs having a slot along one edge thereof and a projection along an opposing edge for insertion in the slot of an adjacent tab, said projection being arcuately

downwardly disposed to locate the end of the projection in alignment with the lower portions of the slot, said projection having an upper lobe and a lower lobe on the outer end



thereof having a radial width approximating the length of said slot, said serial arrangement being such that substantially only the projection of each tab overlies a portion of the adjacent tab.

ERRATUM

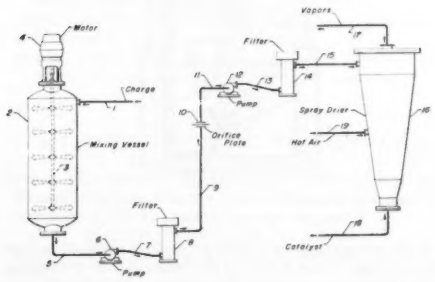
For Class 152—244 see:
Patent No. 3,845,802

3,845,801

HOMOGENIZED PARTICULATE MATTER FOR SPRAY DRYING

Paul J. Kuchar, Hinsdale, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 23, 1973, Ser. No. 344,293
Int. Cl. B01d *1/16;* **F26b** *3/12;* **C01f** *7/34;* **C22b** *13/00;* **C02b**
U.S. Cl. 159—48 R **9 Claims**



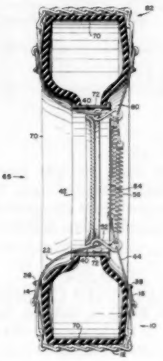
1. A method for spray drying an aqueous slurry or suspension of a refractory inorganic oxide which comprises passing said slurry or suspension through an orifice at a pressure drop in the range of about 300 psig. to about 700 psig., increasing the pressure of the resulting homogenized slurry or suspension, and introducing the same into a spray drier at the elevated pressure.

3,845,802

EMERGENCY TRACTION DEVICE FOR A VEHICLE WHEEL

Sergios Tsipilis, 83 Ashland Ave., West Orange, N.J.

Filed Mar. 6, 1972, Ser. No. 214,612
Int. Cl. B60c *27/62*
U.S. Cl. 152—233 **2 Claims**



1. An emergency traction device attachable to a vehicle wheel including hook receiving means, comprising:

a pair of chain-like traction members,

a first stiff, metal cross bar secured to one end of said traction members,

a second stiff, metal cross bar secured to the other end of said traction members.

a first elongated deformable stiff metal connecting strap adjustably secured at one end thereof to said first cross bar,

a rigid metal hook member having a hook at one end interlocked at the other end thereof directly to said second cross bar,

hook receiving means disposed in the other end of said connecting strap for receiving said hook member one end,

said traction members, first and second cross bar, connecting strap, and said hook member solely forming a traction loop exhibiting negligible strain when stressed below the yield point thereof and a loose closed loop about said wheel when said hook is engaged with said hook receiving means in said connecting strap, and resilient means secured to said rigid hook member and including a wheel hook for engaging said wheel hook receiving means, said resilient means drawing said hook member, said connecting strap, said cross bars and said traction members taut about said wheel when said device is attached to said wheel to remove any slack otherwise present in said traction loop.

3,845,803

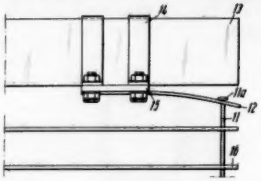
SLAT-TYPE VENETIAN BLIND APPARATUS

Wilfried Horst; Emil Schuppler, and Horst Santen, all of Oldenburg, Germany, assignors to Firma Justin Huppe, Oldenberg, Germany

Filed Jan. 15, 1973, Ser. No. 323,740
Claims priority, application Germany, Jan. 14, 1972, 7201376
Int. Cl. E06b *9/26*
U.S. Cl. 160—166 **3 Claims**

1. A venetian blind construction having a plurality of slats adapted to be spaced in parallel relation across a window or the like comprising an elongated flexible guide member passing through said slats across said window or the like to position

said slats in desired position, means anchoring said elongated flexible member at one end, and spring means anchoring said elongated flexible member at the other end with said elongated flexible member under resilient tension, said spring means comprising a leaf spring having a free end portion substantially at right angles to said elongated flexible member and to which said elongated flexible member is secured.

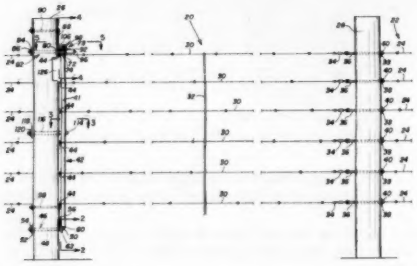


3,845,804

TRACTION GATE WITH CAMMING BAR

Felix B. Romberg, P.O. Box 218, Holland, Tex. 75218

Filed Aug. 2, 1973, Ser. No. 385,048
Int. Cl. E05c *5/00*; E01f *13/00*
U.S. Cl. 160—328 **18 Claims**



1. Apparatus for securing a wire gate in traction, comprising:
   a gate post;
   a standard positionable adjacent said gate post to support one end of a tensionable wire gate barrier;
   means for making a pivotal connection between the lower end of said standard and said post;
   a roller rotatably mounted at the upper end of said standard; and
   a traction block stationary on said gate post and defining a longitudinally convex camming edge for said roller extending between a point of beginning and a location for holding said roller to retain the wire gate in traction;
   said camming edge being longitudinally substantially perpendicular relative to said wire gate barrier at said holding location and being increasingly inclined towards said wire barrier outward from said location.

ERRATUM

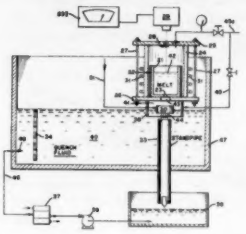
For Class 164—1 see:
Patent No. 3,845,715

3,845,805

LIQUID QUENCHING OF FREE JET SPUN METAL FILAMENTS

Sheldon Kavesh, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,472
Int. Cl. B22d *11/12*
U.S. Cl. 164—89 **11 Claims**



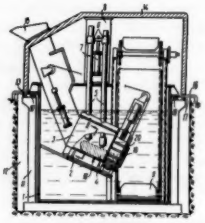
1. A method of making filaments from normally solid metal which comprises the steps of:
   a. melting said metal;
   b. extruding a molten filament of the molten metal;
   c. passing said molten filament in sequence (1) through a controlled gaseous interface zone and (2) into a liquid quench zone, said quench zone comprising a liquid medium which is flowing cocurrently with and essentially at the same velocity as the filament introduced therein; and
   d. recovering the solidified filament.

3,845,806

HIGH-VOLTAGE DISCHARGE ARRANGEMENT FOR STRIPPING FOUNDRY MOULDS OFF CASTINGS

Vladimir Ivanovich Schekin, ulitsa Sennaja, 53, kv. 5, and Vasily Nikolaevich Stepanov, ulitsa Karpenko, 65, kv. 9, both of Nikolaev, U.S.S.R.

Filed May 16, 1973, Ser. No. 360,947
Int. Cl. B22d *29/00*
U.S. Cl. 164—250 **8 Claims**



1. An arrangement for stripping foundry moulds off castings by using high-voltage electrical discharges in fluid comprising: a fluid bath tank; a container for castings to be separated from foundry moulds, said container being mounted in said bath tank with its bearing surface being inclined to a horizontal plane; a plurality of electrodes secured above said container and adapted to ensure a high-voltage electrical discharge in fluid; a gear for traversing said electrodes in relation to said container; a means for charging the castings into said container and discharging them from it; a slide gate set up at the outlet of said container, secured on it to be able to turn and linked mechanically with said charging and discharging means

to enable time correlation of the charging and discharging operations; said container is made up of a casing ensuring the orientation of the castings being treated in relation to said electrodes to create the requisite conditions for high-voltage electrical discharges, and of a tilter which can be brought into engagement with the castings being treated and turn them with respect to the longitudinal axis of the container to ensure exposure of the entire surface of the casting being treated successively to the effect of the high-voltage electrical discharges; a transporting means for the removal of the treated castings together with the separated foundry moulds from the arrangement.

3,845,807

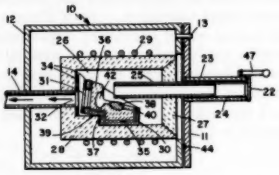
VACUUM CASTING FURNACE

Howard T. Koon, 21922 Ottawa Rd., No. 36, Apple Valley, Calif. 92307

Continuation-in-part of Ser. No. 24,618, April 1, 1970, abandoned. This application Mar. 31, 1972, Ser. No. 240,212

Int. Cl. B22d *17/14, 27/08*

U.S. Cl. 164—255 **4 Claims**



1. A furnace for working high temperature melting point materials, comprising:

a casing having a removable end portion;

a heated muffle in said casing, enclosing a chamber;

a mold assembly mounted in said chamber, said assembly including a porous mold having a pattern cavity therein, and a molten material holding well communicating with said cavity;

said mold assembly is pivotally mounted for tilting said mold assembly to deposit molten material from said well into said cavity;

vacuum means for applying a vacuum to said chamber through the porous material of said mold to draw the molten material into the cavity,

means including a gas inlet for admitting gas to said chamber opposite to the vacuum means,

and said inlet being positioned to direct incoming gas against the mold assembly for tilting the assembly.

3,845,808

APPARATUS FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

Gordon John Spencer Higginbotham, Darley Abbey, and Kenneth Cuckson, Allestree, both of England, assignors to Rolls-Royce (1971) Limited, London, England

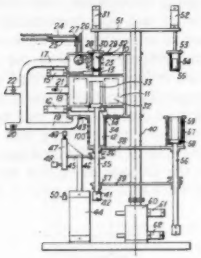
Filed Nov. 30, 1972, Ser. No. 310,966

Claims priority, application Great Britain, Dec. 4, 1971, 56395/71

Int. Cl. B22d *27/16*

U.S. Cl. 164—258 **9 Claims**

1. Apparatus for casting comprising first, second and third adjacent chambers each of which may be sealed and evacuated, the chambers being mounted one above another with the first chamber uppermost, first and second valve means dividing said first chamber from said second chamber and said second chamber from said third chamber respectively, a charge melting arrangement in said first chamber adapted to melt metal and discharge the molten metal through said first valve means into a mould supported within saidsecond chamber during said discharge, a mould heating furnace in said second chamber adapted to heat said mould, and a movable chill support adapted to carry a chill and said mould between



said second and said third chambers wherein said mould is introduced into said heating furnace and removed when charged from said second to said third chamber so that a directional grain structure may be formed in the casting.

3,845,809

MEANS FOR THE CONTINUOUS CASTING OF STEEL

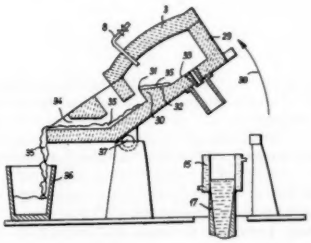
Jacques Pomey, Billancourt, France, assignor to Societe des Aciers Fins de L'Est, Billancourt, France

Continuation of Ser. No. 813,102, April 3, 1969, abandoned. This application Oct. 20, 1971, Ser. No. 191,107

Claims priority, application France, Apr. 3, 1968, 68.146863; June 27, 1968, 68.156841

Int. Cl. B22d *11/10*

U.S. Cl. 164—259 **4 Claims**



1. Equipment for the continuous casting of steel which comprises a steelwork ladle having a jet of molten steel feeding an intermediate pool of the so-called "tundish" type covered by a vault, said intermediate pool comprising a main chamber provided in its lower portion with at least one discharge nozzle adapted to be stopped, said nozzle being formed with a first extension including a substantially vertical refractory tubular duct of sintered vitreous silica adapted to feed at least one tubular ingot mould equipped with cooling means, the lower end of said tubular duct being immersed in themetal fillingsaid ingot mould during the casting operation, means to replace air in said main chamber by a suitable atmosphere supplied thereto via a gas pipe opening into said intermediate pool, said intermediate pool having at least one passage for introducing a suitable addition into said main chamber, said passage opening into the vicinity of the zone where the jet of molten steel delivered by the steelwork ladle is incorporated into the molten steel already contained in said pool, said intermediate pool further comprising a second lateral horizontal extension of said main chamber formed at its upper portion

with an aperture for receiving the steel jet from said steelwork ladle, said addition introduction passage also formed in said second lateral extension, so that the addition is mixed in the liquid steel in the vicinity of the steel jet arrival, said intermediate pool further comprising at least one first refractory partition wall extending through said main chamber and interposed in the bottom of said pool downstream of the steel jet arrival and upstream of said nozzle, the upper edge of said first partition wall being disposed beneath the minimum level contemplated for the molten steel contained in said pool, and at least one second partition wall interposed in the top of said pool between said first partition wall and tubular duct, the bottom edge of said second partition wall being disposed beneath said minimum level, said first and second walls constituting a baffle for the passage of molten metal and causing homogenization of the metal before arrival at said discharge nozzle.

3,845,810

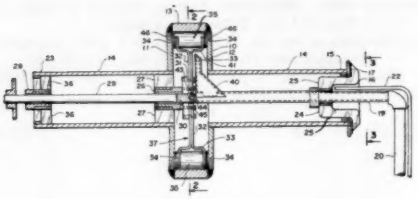
STRIP CASTING APPARATUS

Charles Christian Gerding, Pittsburgh, Pa., assignor to Jones Laughlin Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 188,049, Oct. 12, 1971, Pat. No. 3,712,366. This application Oct. 6, 1972, Ser. No. 295,621

Int. Cl. B22d *11/06*

U.S. Cl. 164–276 **10 Claims**



1. Apparatus for continuously solidifying molten metal in the form of strip comprising a hollow cylindrical drum open to the atmosphere and positioned with its axis horizontal, means for introducing cooling liquid into the drum through an end thereof, means for rotating the drum at a speed below that to which cooling liquid is thrown against the inside surface of the drum by centrifugal force, means extending radially into the drum for withdrawing cooling liquid therefrom through an end thereof, and means for improving heat transfer from drum surface to cooling liquid comprising spider means rotatable inside the drum coaxially therewith, a plurality of drum surface contacting elements for breaking up incipient vapor and carried by the spider means and rotatable therewith, radial slot means for mounting the surface contacting elements in the spider means adapted and adjusted to permit radial displacement of the drum surface contacting elements from contact with the drum surface to a position spaced from the drum surface and means for rotating the spider means at a speed above that at which cooling liquid is thrown against the inside surface of the drum by centrifugal force.

3,845,811

APPARATUS FOR FLOAT CONTINUOUS CASTING OF METAL

Hubert Martin, Richmond, Va., assignor to Terrell Corporation, Richmond, Va.

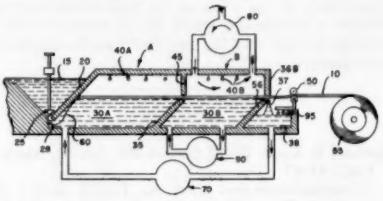
Filed Aug. 2, 1972, Ser. No. 277,224

Int. Cl. B22d *11/12*

U.S. Cl. 164—281 **5 Claims**

1. Apparatus for continuously casting a metal material comprising, a feed vessel for containing the metal material in molten state with outlet means for metering said material into the apparatus for processing,

a first chamber comprising a first vessel for containing a heated liquid carrier material, inlet and outlet means on opposite ends of said first vessel for delivering and casting said metal material on said carrier liquid, and permitting passage thereof out of said first vessel while still residing on said carrier liquid,



a second chamber adjacent said first chamber comprising a second vessel adapted to contain a cooler carrier liquid, said second vessel positioned with respect to said first vessel to receive said cast metal material but limiting the flow of carrier material from the first to second vessels, and means for causing said metal material to sequentially travel through said apparatus over said heated carrier material and cooler carrier material.

3,845,812

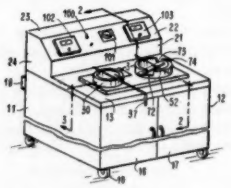
APPARATUS FOR MANUFACTURING SHEET-CUTTING FEMALE DIES

Winston L. Shelton, Jeffersontown, and Joseph L. Newman, Louisville, both of Ky., assignors to Quik Die, Inc., Jeffersontown, Ky.

Division of Ser. No. 133,853, April 14, 1971, Pat. No. 3,756,308. This application May 10, 1973, Ser. No. 359,138

Int. Cl. B22d *41/04*

U.S. Cl. 164—335 **3 Claims**



1. Apparatus for casting female cutting dies comprising, a compact cabinet having an apertured interior shelf providing a horizontal supporting surface, a stationary open-top casting pot supported on said surface and having its bottom exposed to a cooling space within said cabinet above the aperture in said shelf, a conduit communicating said space with the exterior of said cabinet, a blower mounted in said cabinet below said shelf for forcing air through the aperture in said shelf into said space and thence into said conduit, a motor for driving said blower, an open-top melting pot detachably mounted on said shelf surface adjacent said casting pot and adapted to be manually moved for pouring its contents into said casting pot, heat-insulation surrounding the side walls of each of said pots, a stationary heat-insulated apertured cover sheet for said cabinet disposed above said shelf and with the upper ends of each of said pots extending above said cover sheet whereby melt material may be poured from the melting pot into the casting pot and the cast die may be removed from the casting

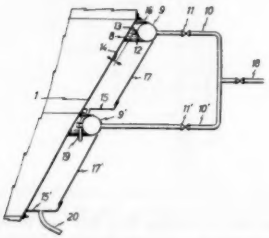
pot without disturbing the positioning of the casting pot, an electrical heating means for said casting pot, an electrical heating means for said melting pot and electrical circuit means housed in said cabinet for controlling the operation of said motor, said heating means for said melting pot, and said heating means for said casting pot.

3,845,813

WATER COOLING OF WALL SURFACES

Georges Bougard, Rue de la Station, 31, Obourg, Belgium

Filed May 29, 1973, Ser. No. 364,722
Claims priority, application Belgium, Jan. 10, 1973, 126261
Int. Cl. F28d *3/04*
U.S. Cl. 165—47 **4 Claims**



1. An apparatus for cooling the outer surface of a conical wall of a cyclone separator, the wall having an upper edge, comprising
   1. a supply container of cooling water mounted adjacent the upper wall edge and laterally spaced therefrom,
   2. means for regulating the pressure of the cooling water supplied to the supply container,
   3. an overflow pipe mounted on top of the supply container,
   (4) an array of sprinkling nozzles oriented towards the wall surface and mounted to deliver the water from the supply container under a constant pressure through nozzle outlets in a series of water jets to the wall surface, the water pressure at the level of the sprinkling nozzles being determined by the height of the water column between said level and the level of the overflow pipe,
   5. means for adjusting the distance of the nozzle outlets from the wall surface, and
   6. means downwardly spaced from the array of nozzles adjacent the wall surface for collecting the water, and for removing the collected water.

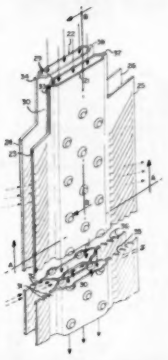
3,845,814

FINNED PRIMARY SURFACE HEAT EXCHANGER

Leslie C. Kun, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,259
Int. Cl. F28b *1/14*
U.S. Cl. 165—148 **10 Claims**

1. A heat exchanger comprising at least one flat primary-surface heat exchange channel element formed and bound by at least one thermally conductive walled material with a maximum dimension width line and a longitudinal length line, said element having an entrance opening and an exit opening, the improvement which comprises the addition of at least one secondary-surface heat exchange slotted fin of width greater than 0.1 inch and less than 0.6 inch disposed substantially along at least one longitudinal section of the channel element, said fin having a multitude of slatted apertures arranged in a louver configuration with adjacent slats separated by slot-shaped apertures, having the fin angle γ between about 0° and about 60° wherein γ is the angle formed between the plane of the fin and a plane containing the maximum dimension width line and longitudinal length line of said channel element, slat width of at least 0.02 inch and less than 0.10 inch, the slat angle β is between about 15° and about 90° wherein β is the



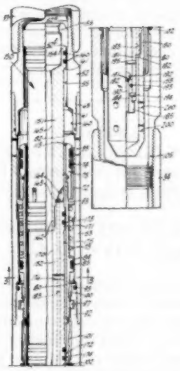
angle formed between the plane of the fin and the plane of the slats and the slot angle α is between about 0° and about 180° wherein α is the angle formed between the longitudinal length line of the channel and the longitudinal length line of the slots.

3,845,815

WELL TOOLS

Turner G. Garwood, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 6, 1973, Ser. No. 386,054
Int. Cl. E21b *43/12*
U.S. Cl. 166—154 **22 Claims**

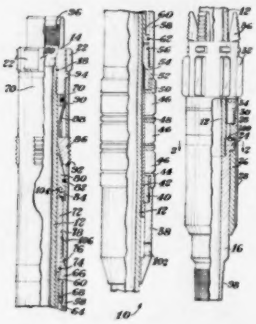


1. A well tool for controlling circulation with a tubing string in a well bore comprising: housing means adapted for connection in said tubing string and having port means for communicating the interior of said tubing string with the exterior thereof; tubular valve means longitudinally movable within said housing means between first and second positions for opening and closing said port means; and seal means for sealing between said housing means and said valve means defining first and second oppositely facing surfaces on said valve means, one of said surfaces being and defining a second area on said valve means responsive to pressure applied to said tool through said tubing string for closing said valve means.

3,845,816
COMPRESSION PACKER

Charles A. Pitts, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 23, 1973, Ser. No. 381,647
Int. Cl. E21b 23/06
U.S. Cl. 166—120 5 Claims



1. Compression packer apparatus comprising an elongated tubular inner mandrel having upper connector means at one end and lower connector means at the lower end thereof, a slip element and compression packer element assembly including packer elements, drag blocks and a lower slip cone carried around the lower part of said mandrel assembly, means for mechanically compressing said packer elements and for advancing said lower slip cone under said slip elements, an upper slip array having a tapered under side disposed above said packer elements and surrounding said mandrel, a slidable upper slip cone disposed around said mandrel adjacent to said tapered underside of said slip array, hydraulic piston drive means coupled to said upper slip cone and disposed around said mandrel, channel means for applying pressurized fluid from below said packer elements to said piston drive means, and vacuum actuated upper slip cone retraction means coupled to said piston drive means.

3,845,817
TERTIARY OIL RECOVERY METHOD

Donald L. Hoyt, Houston, Tex., and Anthony Francis Altamira, Dhahran, Saudi Arabia, assignors to Texaco Inc., New York, N.Y.

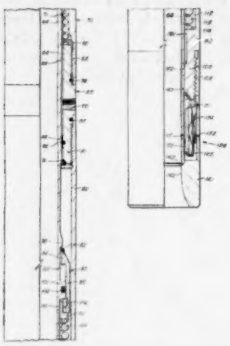
Filed Oct. 17, 1973, Ser. No. 407,116
Int. Cl. E21b 43/00, 43/16
U.S. Cl. 166—245 3 Claims

1. At the conclusion of a secondary recovery operation in a method of producing formation fluids including hydrocarbons from a subterranean hydrocarbon-bearing formation by a direct line drive which comprises penetrating said formation with a plurality of wells disposed in a linear pattern and comprising a series of a pair of production wells and an intermediate injection well, injecting an extraneous fluid into said formation via said intermediate injection well to displace formation fluids including hydrocarbons in said formation toward said production wells, producing said formation fluids including hydrocarbons from said formation via said production wells till breakthrough of said extraneous fluid thereat, thereupon initiating a tertiary recovery operation by imposing a new set of flow gradients comprising the steps of shutting in the intermediate injection wells in alternate series and shutting in the production wells in the series adjacent thereto, and thereupon injecting said extraneous fluid via the remainder of the intermediate injection wells of said series and producing formation fluids via the remainder of said production wells.

3,845,818
WELL TOOLS

Thomas M. Deaton, Dallas, Tex., assignor to Otis Engineering Company, Dallas, Tex.

Filed Aug. 10, 1973, Ser. No. 387,348
Int. Cl. E21b 43/12; F16k 11/14
U.S. Cl. 166—224 S 8 Claims



1. A well tool for controlling fluid flow in a tubing string in a well bore comprising: a housing having a longitudinal bore therethrough for flow of fluids; a valve secured at the lower end of said housing for movement between open and closed positions for controlling the flow of fluids into said bore of said housing; a valve operator tube supported for longitudinal movement in said housing, a lower end of said operator tube being engageable with said valve for moving said valve from a closed to an open position responsive to downward movement of said operator tube; means associated with said operator tube for biasing said tube upwardly to an upper position at which said valve is closed; means for selectively urging said operator tube downwardly to a lower position for opening and holding said valve open; and means associated with said operator tube in said housing for equalizing the pressure across said valve when said valve is closed to reduce the force required for opening said valve including first and second equalizing valve means, said first and second equalizing valve means being opened and closed in a sequence adapted to prevent flow cutting of said first equalizing valve means.

3,845,819
CABLE TOOL FOR SETTING LINERS

Jean Mourlevat, Cazeres, France, assignor to Entreprise de Recherches et d'Activities Petrolieres (ELF), Paris, France

Filed Apr. 25, 1973, Ser. No. 354,253
Claims priority, application France, Apr. 27, 1972, 72.15018
Int. Cl. E21b 23/00
U.S. Cl. 166—239 6 Claims

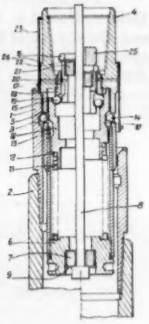
1. A tool for laying a production liner by cable, said tool comprising:

a non-recoverable connector (1) having an internal diameter substantially as great as that of said liner, said connector being formed with an internal circular groove (3);

a recoverable tool component (4) and cable means slidably supporting said recoverable component within said connector, said component having at least one aperture facing the groove in said connector when said tool is fastened to said connector;

means for attaching said tool component to the non-recoverable connector comprising locking means (14) which project from the apertures in the tool component into said groove when in locking position; and

a main sleeve (10) for moving said locking means into and out of said groove by sliding inside the component between a locking position in which said sleeve holds said locking means in said groove to connect said component to said connector and a release position in which said sleeve permits said locking means to depart from said



groove, thus releasing said connector, said main sleeve being supported by and removable with said tool component;

a releasable stop (20) holding said sleeve in its locking position; and

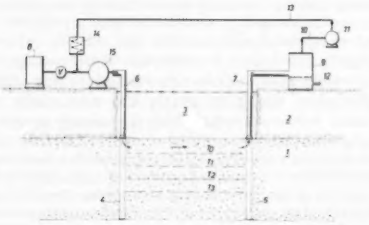
means (25) for releasing said stop.

3,845,820

SOLUTION MINING TECHNIQUE FOR TAR SAND DEPOSITS

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,413
Int. Cl. E21b *43/28*
U.S. Cl. 166—266 **16 Claims**



1. A solution-mining method for recovering bitumen from a bitumen-containing tar sand deposit comprising:

a. removing the overburden above at least a portion of the tar sand deposit;

b. establishing injection means and production means within the tar sand deposits;

c. injecting into the top of the tar sand deposit a solvent for bitumen, said solvent having a density greater than the density of water, said solvent moving essentially horizontally across the tar sand deposit;

d. filling the cavity created by removal of the overburden with water above the solvent; and

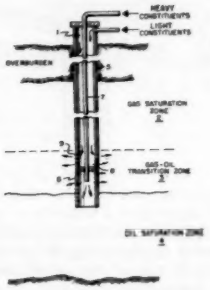
e. removing the mixture of solvent and bitumen from the tar sand deposit from the production means.

3,845,821

RECOVERY OF OIL BY A VERTICAL MISCIBLE FLOOD

Joseph C. Allen, Bellaire, and William B. Braden, Jr., Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 21, 1972, Ser. No. 291,122
Int. Cl. E21b *43/16*
U.S. Cl. 166—269 **14 Claims**



1. A method for the recovery of liquid hydrocarbons from a subterranean reservoir containing same and penetrated by an injection well and a production well, comprising the steps of:

a. injecting via said injection well into said subterranean reservoir adjacent the uppermost region of said liquid hydrocarbons in said reservoir a first light hydrocarbon fluid and separately and simultaneously, and below said first hydrocarbon fluid, a second heavier hydrocarbon fluid,

b. continuing said injection for a time sufficient to establish in-situ and adjacent said uppermost region a slug consisting of a mixture of said first fluid and said second fluid,

c. injecting into said reservoir a driving fluid thereby displacing said slug and said reservoir hydrocarbons thru said reservoir toward said production well,

d. producing said hydrocarbons via said production well.

3,845,822

PLUGGING OR SEALING FRACTURES IN FORMATIONS

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 224,956, Feb. 9, 1972, abandoned. This application June 21, 1973, Ser. No. 372,242
Int. Cl. E21b *33/138, 43/27*
U.S. Cl. 166—281 **30 Claims**

1. A method for plugging a fracture in a formation, which method comprises:

introducing into said fracture a fluid comprising an aqueous gel, said gel comprising water to which there has been added a water-thickening amount of a water-soluble cellulose ether, a sensible amount of a water-soluble compound of a polyvalent metal wherein the metal present is capable of being reduced to a lower polyvalent valence state and which is sufficient to gel said water when the valence of at least a portion of said metal is reduced to said lower valence state, and an amount of a water-soluble reducing agent which is effective to reduce at least a portion of said metal to said lower valence state; and

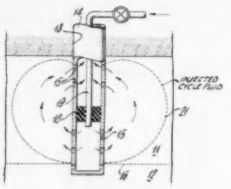
maintaining said gel in said fracture in a quiescent state for a period of time sufficient for said gel to develop sufficient gel strength to remain in place in said fracture.

3,845,823

METHOD FOR PREVENTING BOTTOM WATER CONING IN OIL WELLS

Joseph C. Allen, Bellaire, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 340,994
Int. Cl. E21b 43/24, 43/16
U.S. Cl. 166—303 3 Claims



1. A method of producing petroleum hydrocarbons and inhibiting water coning during the production of petroleum hydrocarbons from a well bore which penetrates a subsurface petroleum hydrocarbon-producing formation which is in contact with and overlays an adjacent water-producing formation which comprises:

a. injecting into the lower portion of the formation a slug of liquid hydrocarbon having a material selected from the group consisting of carbon dioxide and flue gases dissolved therein in amounts up to the saturation value at the injection pressure,

b. injecting via said well bore a liquid hydrocarbon at a temperature of about 200° to about 500° F into the lower part of said hydrocarbon-producing formation,

c. withdrawing via said well bore the injected liquid hydrocarbon from the upper portion of the hydrocarbon-producing formation, and

d. continuously injecting and withdrawing said liquid hydrocarbon while at the same time producing via said well bore petroleum hydrocarbons from the upper portion of the said hydrocarbon-bearing formation, the volume of the liquid hydrocarbon injected being less than the volume of the withdrawn hydrocarbon plus the volume of the produced petroleum hydrocarbons, the volumes being expressed in reservoir or formation volumes.

3,845,824

FRACTURING SUBTERRANEAN FORMATIONS WITHOUT DAMAGING THE FORMATION

John M. Tinsley, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed June 25, 1973, Ser. No. 373,579
Int. Cl. E21b 43/26
U.S. Cl. 166—308 5 Claims

1. A method of fracturing a subterranean formation; comprising the steps of:

contacting the subterranean formation with an aqueous liquid containing low molecular weight anionic polyelectrolytes;

applying sufficient pressure to said aqueous liquid to fracture said formation;

maintaining said pressure while injecting said aqueous fluid into said fracture; and

maintaining said pressure while injecting an aqueous fracturing fluid containing an organic polymer gelling agent into said fracture to extend said fracture into said formation;

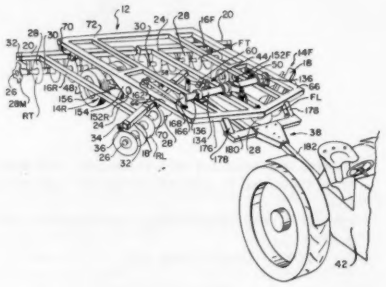
said low molecular weight anionic polyelectrolytes having molecular weights significantly lower than the molecular weights of said organic polymer gelling agents and adsorbing to the organic polymer attracting sites in the subterranean formation adjacent to the faces of said fracture extending into the subterranean formation.

3,845,825

MULTIPLE-GANG DISC-TYPE GROUND TILLAGE IMPLEMENT

James A. Boone, Quinter; Harold G. Walker, Wakeeney, and Galen R. Huffman, Quinter, all of Kans., assignors to Ideal Industries Incorporated, Quinter, Kans.

Filed Jan. 15, 1973, Ser. No. 323,839
Int. Cl. A01b 5/06
U.S. Cl. 172—158 17 Claims

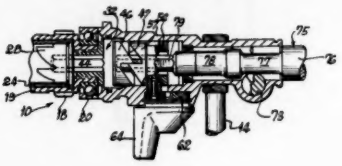


1. In a disc-type ground tillage implement: a vertically adjustable wheeled carriage including a frame, attachment means on the front end of the frame for detachably connecting same to a towing vehicle, wheel-mounting means depending from the underside of the frame in transversely spaced relation behind the attachment means for movement relative thereto between a lowered and a raised position, and ground-engaging wheels journalled for rotation on the wheel-mounting means about transversely extending axes, said wheels and the mounting means therefor cooperating to define an undercarriage movable between a retracted position and an extended position; front and rear disc subassemblies hingedly attached to the underside of the carriage frame in rearwardly offset side-by-side relation to one another for independent tiltable movement into substantially coplanar relation with one another about transversely spaced parallel forwardly extending axes located intermediate their respective side margins, each of said disc subassemblies overlying one of the wheels in the extended position of said undercarriage and including a subframe having an opening therein located to accommodate movement of the wheel-mounting means associated with said wheel upon movement of said undercarriage between its retracted and extended positions, both of said subassemblies having a lead disc gang and a trailing disc gang supported therebeneath arranged in substantially coplanar divergent relation to one another and in oppositely inclined angular relation to the direction of carriage travel, the gangs of the two disc subassemblies being so located relative to one another and to their respective subframes that the trailing gangs are aligned and the lead gangs are disposed in rearwardly offset parallel relation to one another whenever said subassemblies lie in coplanar relation; and, rigid link means interposed between adjacent points on the subframes pivotally interconnecting said front and rear disc-subassemblies together for coordinated movement, said link means being operative in response to a force tending to tilt one of the disc subassemblies in one direction to tilt the other of said disc subassemblies in the opposite direction.

3,845,826
ROTARY DISCONNECT FOR A ROTARY HAMMER TOOL

Hanspeter E. Beisch, Buffalo Grove, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Feb. 23, 1973, Ser. No. 334,988
Int. Cl. B25d 9/04, 9/06
U.S. Cl. 173—48 5 Claims



1. In a rotary hammer power tool of the type having an output member in the form of a tappet which is adapted to be subjected to rotation and to axial hammering blows simultaneously, the improvement comprising:

a. said tappet having a first set of clutch teeth and oppositely extending, centrally disposed, first and second hammering formations;

b. a rotary tool bit driver and wall means mounting the same for rotation coaxially with said tappet, said wall means also permitting axial reciprocal movement of said driver, which driver has a centrally disposed, axial, through bore and a second set of clutch teeth adapted for engagement with said first set of clutch teeth thereby to permit said tappet to transfer rotation to said driver;

c. a tool element having a shank received in said bore of said driver with the distal end thereof in abutting engagement with said first hammering formation thereby permitting the tappet to impart hammering blows to the tool element;

d. connection means on said driver and said shank for transferring rotation of the former to the latter and permitting axial reciprocal movement of said driver relative to said tool element and vice versa;

e. selection means engaged with said driver for reciprocating the same axially thereby to engage and disengage said first and second sets of clutch teeth for selectively imparting rotation to said driver and to the tool element therein;

f. said power tool having a reciprocal hammering element arranged to engage said second hammering formation thereby to impart hammering blows to said tappet;

g. other wall means rotatably mounting said tappet and including an abutment surface; and

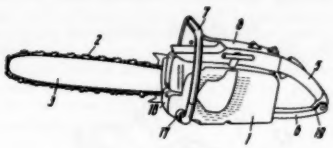
h. said tappet having an abutment element arranged to abut said abutment surface thereby to establish the forwardmost position of said tappet, which tappet is out of the range of the movement of said hammering element when the former is in said forwardmost position thereof, said tappet being moved inwardly and into the range of movement of said hammering element by the engagement of the distal end of said shank with said first hammering formation.

3,845,827
PORTABLE IMPLEMENT, ESPECIALLY MOTOR CHAIN SAW

Gotthilf Schulin, Fellbach, Germany, assignor to Andreas Stihl Maschinenfabrik, Neustadt, Germany

Filed Aug. 2, 1972, Ser. No. 277,339
Int. Cl. B27b 17/00
U.S. Cl. 173—162 26 Claims

1. A portable tool, especially motor chain saw, comprising handle means having a mass inertia that is low relative to the mass of the tool, which includes: spring elastic connecting means, said handle means being connected to said tool through the intervention of said spring elastic connecting means, and compensator means comprising a compensator mass and spring elastic supporting means and being connected to said handle means so as to be oscillatable relative thereto,

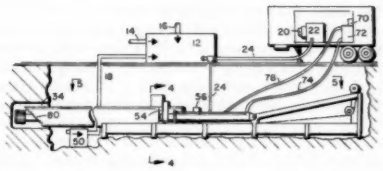


the handle means including a handle frame, and in which said compensator means is so arranged in said handle frame that the longitudinal axis of said compensator means extends in a direction transverse to the longitudinal axis of said handle frame, said handle frame including a handle pipe, said compensator means being arranged within said handle pipe.

3,845,828
MACHINE FOR ORIGINAL BORING DESCRIBED AND CLAIMED THEREIN

A. C. Taylor, 615 W. Civic Center Dr., Suite 215, and Robert W. Clarke, both of Orange County, Calif. 92701

Filed Nov. 12, 1971, Ser. No. 198,244
Int. Cl. E21b 7/10
U.S. Cl. 175—73 3 Claims



1. A horizontal boring machine comprising:
hollow drill pipe capable of being moved linearly;
a drill coupled to and rotated by the drill pipe;
pumping means to pump mud to the forward end of the drill;
movable power-sub means coupled to rotate the drill pipe;
means to control pressure inside the bore near the drill;
casing;
casing clamp means;
a spider;
means to longitudinally move the casing via the casing clamp means;
a shoe coupled to the forward portion of the casing;
means to rotate the casing and shoe in either direction around the drill pipe;
wherein the forward edge of the shoe is cut back from a front tip at about 45°;
teeth on the forward edge of the shoe;
two rams which move the spider; and
hydraulic power means.

3,845,829

DRILL, ESPECIALLY STONE DRILL

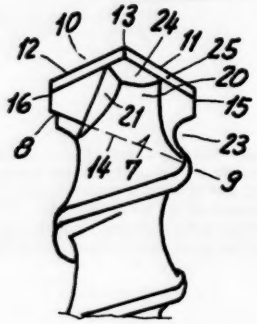
Dietrich Schaumann, Weingarten, Germany, assignor to Hawera Probst KG. Hartmetall Werkzeufabrik Ravensburg, Ravensburg, Germany

Filed Mar. 12, 1973, Ser. No. 340,278

Claims priority, application Germany, Mar. 10, 1972, 2211532

Int. Cl. E21c 13/08

U.S. Cl. 175—395 2 Claims



1. A drill, especially a stone or masonry drill, comprising; a rod-like shank having at least one helical groove extending therealong from one end, said shank having a helical rib separating adjacent convolutions of said groove, a transverse slot in said one end of said shank and a hard wear resistant blade in said slot and forming a cutting element, said cutting element having a principal cutting edge on the front facing axially away from said shank and extending transversely to the axis of said shank, said cutting element also having substantially parallel faces and having side edges and having a back edge, the maximum diameter of said shank at said one end falling within the cylindrical envelope of said shank, said spiral groove extending to near said cutting element and that portion thereof adjacent said cutting element forming a passage which receives material taken by said drill, said rib extending to one of the said faces of the cutting insert and being notched adjacent the leading side of the insert, said shank having an inclined surface formed thereon leading from the said notch in said rib to the end of the shank nearest the cutting edge of the insert.

3,845,830

METHOD FOR MAKING HIGH PENETRATION RATE DRILL BITS AND TWO BITS MADE THEREBY

Joe R. Fowler, and John L. Bryan, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,828

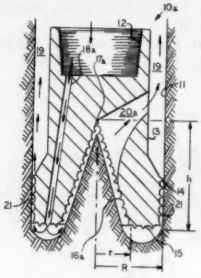
Int. Cl. E21b 9/16

U.S. Cl. 175—404 13 Claims

1. A method for forming a high penetration rate drill bit wherein the drill bit has a bottom cutting surface comprising the steps of,

a. forming a recess in the bottom cutting surface of the drill bit, the recess having a height and a circular base with a radius,

b. shaping the bottom cutting surface recess to a continuous non-cylindrical surface of revolution having a height to radius ratio of substantially three-to-one, and



c. shaping the drill bit bottom non-cylindrical surface of revolution into a paraboloidal shape.

3,845,831

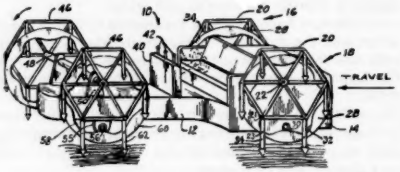
VEHICLE FOR ROUGH AND MUDDY TERRAIN

Jesse C. James, Huntsville, Ala., assignor to Charles D. Martin, Wharton County, Tex.

Continuation-in-part of Ser. No. 62,821, Aug. 11, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,740

Int. Cl. B62d 57/02

U.S. Cl. 180—8 F 4 Claims



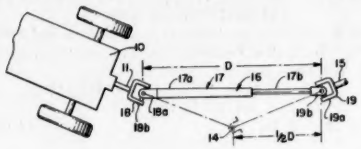
1. A vehicle for traversing soft terrain comprising a vehicle body having a plurality of leg carrying mechanisms movable supported thereon, each leg carrying mechanism comprising a first wheel being rotatably secured to said vehicle, a second wheel being disposed adjacent to said first wheel, a plurality of legs, supported by each of said leg carrying mechanisms and being movable substantially vertically upwardly and downwardly and simultaneously revolving with said leg carrying mechanisms, said legs serially engaging the terrain over which said vehicle is moving said propelling said vehicle across said terrain, said legs being connected at different points thereon to each of said wheels, whereby said second wheel is rotatable about an axis that is spaced from the axis of said first wheel, at least one roller member rotatably supported by said vehicle, and roller engaging surface means formed on said second wheel and roller member engagement with said roller engagement surface means causing said second wheel to support the weight of said vehicle, and roller member-surface means engagememt cooperating with said legs to achieve smooth traversing of said vehicle over the terrain, each leg providing a spread foot comprising a pair of curved sheet spring members secured to leg lower extremity and joined downwardly along a line of contact, said spring members bending upon entering said soft terrain to spread to a substantially broad foot for adequate support of said vehicle, and spring members collapsing upon withdrawal of said foot from said soft terrain to allow easy removal of said foot from said terrain, said second wheel roller engagement surface means comprising the inner rim surface of said second wheel for roller member cooperation.

3,845,832

POWER TAKE-OFF CONNECTION

John W. Glover, Raleigh, N.C., assignor to Darf Corporation, Edenton, N.C.

Filed Dec. 6, 1971, Ser. No. 205,193
Int. Cl. B60d 1/00
U.S. Cl. 180—14 R 5 Claims



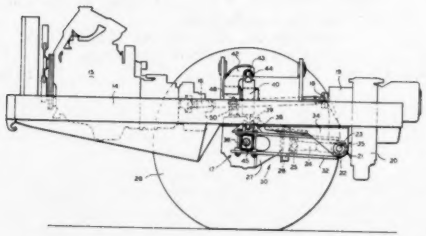
1. The combination of a tractor having a rearwardly projecting power take-off shaft, a power-driven implement drawn by said tractor and having a driven shaft, a pivotal hitch connecting said implement to the tractor, and a universally jointed telescopic drive line connecting said driven shaft of the implement to the power take-off shaft of the tractor, said drive line including a telescopic shaft unit and a pair of universal joints at the ends of said shaft unit, the combination being further characterized in that the pivot of said hitch is located at a point substantially midway between said universal joints, said drive line also including an over-running clutch embodied in said telescopic shaft unit, said universal joints having yokes disposed in a common plane at the ends of said telescopic shaft unit, and said over-running clutch having at least one but no more than two diametrically opposite driving positions whereby the universal joint yokes are always coplanar when the clutch is engaged.

3,845,833

TRACTOR SUSPENSION

William A. Bice, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 304,433, Nov. 7, 1972, abandoned.
This application Nov. 9, 1973, Ser. No. 441,696
Int. Cl. B60g 9/02
U.S. Cl. 180—29 10 Claims



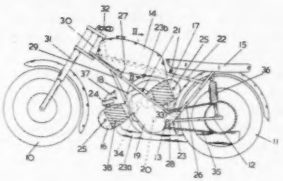
1. A suspension for a two-wheeled tractor having a frame, a pair of spaced apart, longitudinally extending frame side rails, a drive axle extending transversely of the frame side rails, said suspension connected between the drive axle and vehicle frame and comprising a pair of brackets depending from the frame side rails behind the drive axle, a pair of suspension arms pivotally connected to said brackets and extending forwardly therefrom beneath the respective frame side rails, a pair of arm brackets solidly mounted on the suspension arms at the front supporting opposite ends of said drive axle, each having a laterally extending portion inboard of the frame side rails, a pair of frame brackets solidly mounted on a portion of the frame extending above the frame side rails and having an upper end portion located substantially directly above the lateral end portions of said arm brackets, a pair of ride cylinders pivotally mounted between the bracket portions such that the lower ends of each ride cylinder are pivotally mounted substantially directly above the drive axle adjacent the frame side rails and extend upwardly above the frame side rails whereby the drive axle, suspension arms and frame side rails are in a more compact relation.

3,845,834

MOTOR CYCLE CONSTRUCTION

Francis Ernest Sheppard, Milton Gardens, Oadby, England

Filed Sept. 15, 1971, Ser. No. 180,766
Claims priority, application Great Britain, Sept. 17, 1970, 44371/70
Int. Cl. B62d 61/02; B60k 11/00
U.S. Cl. 180—33 A 3 Claims



1. In a motor cycle, the combination comprising a frame having laterally spaced frame members including laterally spaced and downwardly and rearwardly sloped upper longitudinal frame members and laterally spaced lower frame members sloped at a steeper angle than said upper longitudinal frame members and joined forwardly to the forward ends thereof, a saddle mounting at the upper rear part of the said frame, a fuel tank mounted on said laterally spaced upper frame members forwardly of said saddle mounting and having an upwardly recessed bottom wall straddling said upper frame members to present around them a downwardly and rearwardly sloped inverted channel shaped air deflecting duct, an air cooled opposed cylinder internal combustion engine mounted between parts of said frame below and forwardly of said saddle mounting, said engine having its cylinders extending lengthwise of the frame and at a substantial angle to the horizontal with the rear cylinder at a higher level than the front cylinder and at a position lower than and adjacent to the rearward end of said air deflecting duct whereby to receive therefrom a stream of cooling air during forward motion of the motor cycle, and with the front cylinder projecting downwardly and forwardly beyond the said sloped lower frame members.

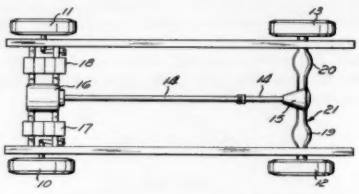
ERRATUM

For Class 180—54 see:
Patent No. 3,845,841

3,845,835
ELECTRIC POWER PLANT FOR LAND VEHICLES

Earl W. Petit, 2713 N.E. 21st. Ave., Fort Lauderdale, Fla. 33306

Filed Mar. 14, 1973, Ser. No. 341,030
Int. Cl. B60k *1/00*
U.S. Cl. 180—65 R **4 Claims**



1. In a vehicle having vehicle-propelling wheels, drive axle means for driving said wheels, an electric drive motor for driving said drive axle means, two sets of batteries for energizing the motor alternately, two voltage generating machines mounted on said drive axle means to be driven therewith for alternately charging said sets of batteries through a regulator, and selective means for connecting the set of batteries which is not being charged to the motor for energizing the motor while disconnecting from the motor the other set of batteries and connecting the said other set to the regulator to be charged, the improvement comprising:

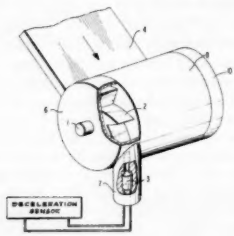
first relay means for selectively coupling one said voltage generating machine or the other to the regulator for charging the selected battery, and

operating circuit means for operating said relay means and said selective means.

3,845,836
SAFETY DEVICE FOR VEHICLES

Hellmut Bendler, Erlangen-Spardorf, and Gunther Marondel, Erlangen, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed May 1, 1972, Ser. No. 249,150
Claims priority, application Germany, Apr. 29, 1971, 2121101
Int. Cl. B60k *27/00;* **B60m ; B60r**
U.S. Cl. 180—82 C **7 Claims**

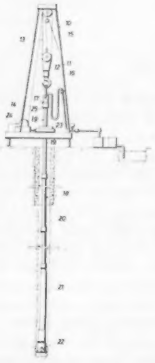


1. Safety belt arrangement for vehicles, especially automotive vehicles, comprising a belt securable at one end to the vehicle and securable at the other end to tensioning means for tensioning said belt, sensor means for detecting a predetermined value of deceleration, and actuator means for operating said tensioning means to tension said belt in response to detection of said predetermined value of deceleration by said sensor means, said tensioning means including an impeller wheel having a plurality of blades disposed for rotation on an axle within a housing, said axle also being connected to said other end of said belt so as to wind said belt upon rotation thereof, said actuator means including compressed gas means mounted on said housing for directing compressed gas against the blades of said impeller wheel to effect rotation of said axle.

3,845,837
GRAVITY FORCE OPERATED APPARATUSES FOR GENERATION OF LONGITUDINAL PULSE DATA FROM THE BOTTOM OF A WELL

William R. McEvers, Jr., Bellaire; Percy T. Cox, and Albert P. Richter, Jr., both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,319
Int. Cl. E21b *47/12*
U.S. Cl. 181—.5 AG **15 Claims**



1. A system for transmission of data from the lower end of a drilling assembly in a wellbore to the surface comprising,

a. a drilling assembly having a drill string,

b. data measuring means on the lower end of said drill string,

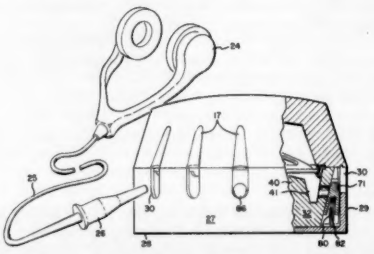
c. gravity force means for generating acoustical signal pulses in the lower end of the drill string, and

d. means for monitoring the gravity force generated acoustical signal pulses in the drill string at the surface.

3,845,838
ACOUSTIC DISTRIBUTOR

Gerald E. Malmrose, Chatsworth, and Ulf R. Helgesson, Woodland Hills, both of Calif., assignors to Acoustifone Corporation, Chatsworth, Calif.

Filed June 25, 1973, Ser. No. 372,798
Int. Cl. G10k *13/00;* **H04r** *1/28;* **A61b** *7/02*
U.S. Cl. 181—31 R **10 Claims**



1. In an acoustic distributor for use in classrooms and the like for transmitting sound waves from a single electro-

acoustic transducer to a plurality of listeners without disturbing other nearby persons:

a substantially cylindrical thick-walled enclosure formed of sound absorbing polymeric material and having an interior-to-exterior attenuation characteristic for audio frequency acoustic waves of the order of about 60 decibels;

a loudspeaker mounted within said enclosure and adapted to be electrically connected to a source of audio frequency signals for producing high intensity acoustic waves within said enclosure;

a plurality of angularly spaced substantially cylindrical apertures extending radially outward through the walls of said enclosure in a single horizontal plane spaced in front of said loudspeaker whereby sound waves of substantially equal intensity are propagated toward all said apertures;

a plurality of acoustic headsets, each including an elongated listening tube having at its input end a semi-rigid probe adapted to be inserted into any one of said apertures, for conducting sound waves from said one aperture to the person using the particular headset;

a plurality of valve mechanisms mounted exteriorly of said thick-walled enclosure, respectively adjacent the outer ends of different ones of said apertures;

with each valve mechanism being operable, in a direction substantially normal to the longitudinal axis of the adjacent aperture, from its closed position to its open position upon, and as a direct consequence of, the insertion of a listening tube probe into the associated aperture and being operative to exert a retaining force on the inserted probe whereby the probability of inadvertent disconnection of the headset listening tube from the enclosure is substantially reduced.

3,845,839

NOISE DAMPING DEVICE FOR MOTOR BOATS

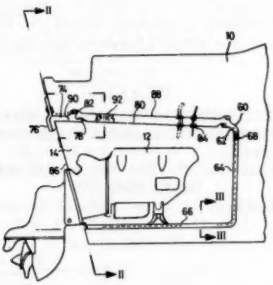
Henning Emanuel Eriksson, Furumostigen 10, 95200 Kalix, Sweden

Filed Mar. 7, 1973, Ser. No. 339,021

Claims priority, application Sweden, Mar. 10, 1972, 3029/72

Int. Cl. F01n *7/00*; **B63h** *5/06*; **F02b** *77/00*

U.S. Cl. 181—33 K **11 Claims**



1. In a motor boat having a body and a motor, a device for damping the noise produced by said motor, said device having a receptacle carrying said motor, said receptacle being a box retractably mounted in a cavity arranged in said body, a space being formed between the box and said body and a noise damping material at least partly filling said space.

3,845,840

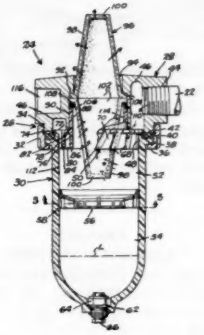
SILENCER AND LUBRICANT TRAP FOR AIR TOOL EXHAUST

George E. Thrasher, Pontiac, Mich., assignor to Master Pneumatic-Detroit, Inc., Sterling Heights, Mich.

Filed June 4, 1973, Ser. No. 366,449

Int. Cl. F01n *3/06*

U.S. Cl. 181—36 R **16 Claims**



1. A silencer and lubricant trap for air exhausting from pneumatically powered tools which comprises,

means forming a body having an inlet adapted to receive air exhausted from a pneumatic tool,

said body defining an expansion chamber having a wall, a passageway between said inlet and chamber, a lubricant sump below said chamber, and an outlet downstream of said chamber,

baffle means in said passageway effective to direct air flowing therethrough into lubricant-depositing impingement against the expansion chamber wall,

muffler means effective to muffle the sound of air passing through said outlet,

there being surface portions within said body along which air flows toward said outlet,

and at least one gap between certain of said surface portions surrounding the path of said air flow,

said gap being so dimensioned and positioned as to intercept lubricant propelled toward said outlet along those of said surface portions upstream of said gap,

said baffle means comprising a circumferentially arranged series of alternate webs and passages dimensioned and positioned to so divert air flowing through said passages, said baffle means, said certain surface portions, and said gap comprising elements of an assembly,

said webs and passages being disposed around the periphery of said assembly,

said assembly having a partition which interconnects said webs, forms inner surfaces of said passages, and forms an outer side of said gap,

said assembly having a skirt which is spaced from said partition and forms the inner side of said gap.

3,845,841

AUXILIARY FUEL FEEDING SYSTEM FOR A VEHICLE

Earl W. Kloefkorn, Manchester, Okla. 73758

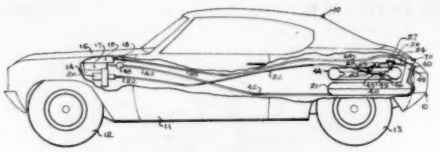
Filed Dec. 16, 1969, Ser. No. 885,465

Int. Cl. B60k *15/02*

U.S. Cl. 180—54 R **14 Claims**

1. In a vehicle, engine means, air compressor means, liquid fuel tank means, fuel feed line means connected to said engine means for conducting fuel thereto from said fuel tank means, fuel pump means connected into said fuel feed line means, and

spare tire and wheel assembly means functioning as an accumulator and connected to said air compressor means for receiving and storing compressed air therefrom, and said fuel tank means being connected to said air compressor means and



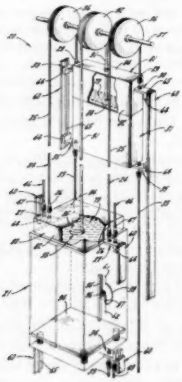
said spare tire and wheel assembly means for receiving compressed air therefrom that forces liquid fuel from said fuel tank means to said engine means when said fuel pump means is not in operation.

3,845,842

ELEVATOR SYSTEM

Wallace H. Johnson, 1461 Monticello Ln., Rockford, Ill. 61107

Filed June 13, 1973, Ser. No. 369,513
Int. Cl. B66b *17/12*
U.S. Cl. 187—15 **9 Claims**



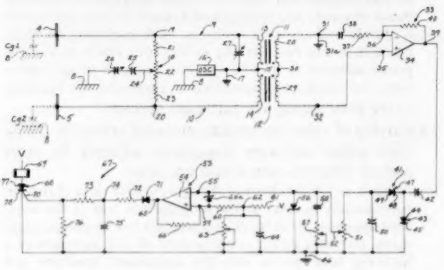
1. An elevator system for use within a vertical shaft in a multiple story building including, a car of predetermined unloaded weight suspended within the shaft to transport a load between floors within the building, a counterweight suspended within the shaft and spaced laterally from said car to offset the unloaded weight of the car, a set of upper and lower wheels rotatably mounted adjacent the upper and lower ends of the shaft, respectively, a flexible support line trained around said upper and lower wheels, said car and said counterweight being fastened to opposite sides of said line between said upper and lower wheels, a small motor operable to power rotate one of said wheels in said set to drive said line around said wheels to move the car and said counterweight vertically within said shaft, a weight medium movable between said counterweight and said car to vary the weight of the counterweight in relation to changes in the weight of the load in the car, means mounted within said car and operable to produce a signal in response to changes in the load, and means operable in response to said signal to move said weight medium between said counterweight and said car in an amount equal to half the change in the weight of the load to keep the weight of the medium in the counterweight substantially equal to the weight of the load plus the weight of the medium in the car prior to movement of said car whereby the system is kept balanced to reduce the power required of said small motor to move the car between floors.

3,845,843

VEHICLE DOOR PROXIMITY DETECTOR SYSTEM

David J. Cohen, Skokie, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed June 4, 1973, Ser. No. 366,754
Int. Cl. B66b *13/26*
U.S. Cl. 187—29 R **12 Claims**



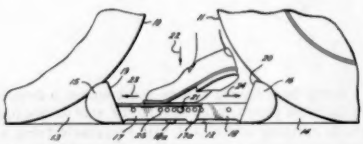
1. In a system providing a load transporting vehicle having a door, door-operating means connected for opening and closing said door, and a proximity detector connected to said door and to said door-operating means for selectively modifying the operation of said door, said detector comprising: a capacitance means including a sensing means secured to said door and responsive to the presence of load adjacent to the edge of said door; a transformer means having an input winding means including circuit means connected with said capacitance means to form a pair of parallel connected electrical paths for supplying first and second signals, each of said paths including a different portion of said capacitance means and a different portion of said transformer means; a source of periodic voltage electrically connected to said circuit means for energizing said parallel paths; said transformer means having an output winding means coupled to the different portions of said input winding means for establishing an output including a pair of oppositely polarized signals and varying according to the variance between said first and second signals in said pair of parallel paths, and a control circuit connected to said output winding means and to said door-operating means for selectively modifying the operation of said door in response to the sensed presence of load adjacent to the edge of said door.

3,845,844

WHEEL CHOCKS FOR TANDEM WHEELS

Joseph F. Woerner, 2102-Chamber of Commerce Building, Houston, Tex.

Filed Mar. 19, 1973, Ser. No. 342,765
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **10 Claims**



1. A chock assembly for placing between two tandem wheels to prevent them from turning comprising,

an identical pair of wheel chocks for positioning between the two tandem wheels,

an identical pair of rigid arms, one each extending from each of the wheel chocks toward each other,

the rigid arms having inner facing sides in a plane generally through the transverse center of the wheel chocks, and

means pivotally connecting the arms together at a point along the arm so that the arms extend upwardly from a surface supporting the tandem wheels when the chock assembly is in nonlocking position between the tandem wheels,

depressing the arms to a generally horizontal position causing engagement of the chocks with the tandem wheels and the surface thereby preventing the wheels from turning.

3,845,845

WHEEL CHOCK FOR VEHICLES

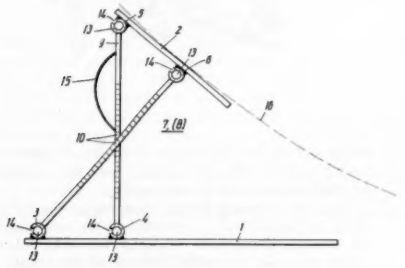
Hubert Geisthoff, Lohmar, Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rheinland, Germany

Filed Oct. 5, 1973, Ser. No. 403,892

Claims priority, application Germany, Oct. 7, 1972, 2249211

Int. Cl. B60t *3/00*

U.S. Cl. 188—32 **9 Claims**



1. A wheel chock for vehicles comprising a base plate, a wheel supporting chock plate, first and second pivot means on each of said base and chock plates and equally spaced behind each other thereon transversely of the pivot axis, and a plurality of mutually crossing struts pivotally connecting corresponding pivot means on said base and chock plates such that said chock plate is pivotable from an assembled position in the same plane as said base plate to a position above the base plate for engaging the periphery of a vehicle wheel.

3,845,846

TELESCOPING TONGUE MEANS USABLE FOR SETTING BRAKES ON A FARM WAGON

Henry L. Sundermann, Rt. 4, Box 79, Sioux Falls, S. Dak. 57101

Division of Ser. No. 211,907, Dec. 27, 1971. This application June 26, 1973, Ser. No. 373,887

Int. Cl. B60t *7/20*

U.S. Cl. 188—112 **3 Claims**

1. Tongue means for a wagon having brakes operated by a flexible member comprising an outer member, an inner member telescopically slidable within said outer member, pulley means on said members, said flexible means being arranged over said pulley means so that collapse of said telescoping members will cause said flexible member to be pulled into the tongue to actuate said brakes, and stop means including a spring loaded lever means mounted on said outer means, said outer means being formed with an opening therein, a part of said lever means extending through said opening to provide heavy frictional engagement between said lever means and said inner means.

3,845,847

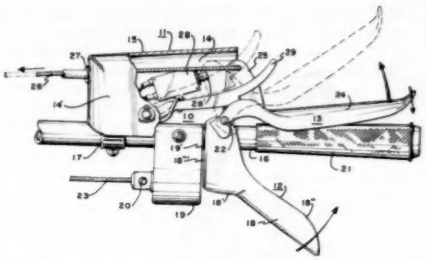
THROTTLE, IGNITION AND BRAKE CONTROLS

Richard H. Camp, P.O. Box 62, Haines, Oreg. 97833

Filed Aug. 20, 1973, Ser. No. 389,939

Int. Cl. B60k *29/00*

U.S. Cl. 192—3 S **10 Claims**



1. A systems shut-down handle for motorized apparatus having a throttle cable, a brake operator, and an electrical circuit controlling ignition, comprising:

A housing mounted to handlebars of said apparatus;

A throttle assembly including a pivotally mounted lever juxtapositioned over the grip of said handlebar to said housing, and being connected to its end adjacent said housing to the apparatus throttle cable; and

A shut-down assembly having a brake lever connected to the brake operator pivotally mounted over said handlebar grip opposite and opposingly to said throttle lever and being provided with means for actuating a cutoff switch having means to brake the electrical circuit controlling ignition in the apparatus engine when said brake lever is released.

3,845,848

BILL ACCEPTING MOTOR FUEL DISPENSING APPARATUS

Elmer A. Robbins, Fort Wayne, Ind., assignor to Tokheim Corporation, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 84,320, Oct. 27, 1970, abandoned. This application Feb. 15, 1972, Ser. No. 226,406

Int. Cl. G07f *13/02*

U.S. Cl. 194—13 **52 Claims**

1. A system for dispensing a quantity of liquid having a predetermined total value, consisting of a predetermined number of small monetary units of value, in response to the collection of a valid bill of equal total value, said system comprising:

a. a bill acceptor which includes means to receive a deposited bill, means to determine its validity and value, means to collect a valid bill of proper value and means to thereupon produce a first signal,

b. a dispensing apparatus having a manually operable nozzle valve, means for supplying a flow of liquid to said valve,

said latter means being actuable between flow and stop flow conditions,

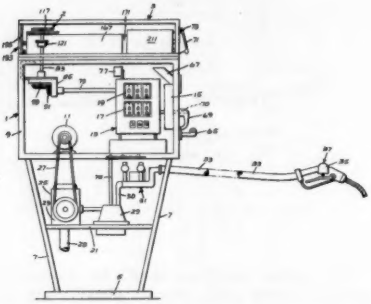
c. said dispensing apparatus also having means for measuring the amount of liquid dispensed, a resettable value register, computing means connected to be driven by said measuring means and connected to drive register in accordance with the value of the liquid dispensed and means for resetting said register to zero,

d. first control means having normal and first conditions, means operable after the resetting of said register for establishing said first control means in said first condition, and manually operable means for restoring said first control means to said normal condition,

e. second control means having normal and first conditions, and means for establishing said second control means in said first condition in response to said first signal,

f. means responsive to said first and second control means in said normal and first conditions, respectively, to permit operation of said register resetting means,

g. means responsive to said first and second control means



in said first conditions for actuating said flow supplying means to said flow condition,

h. means operable in time with said value register to produce a second signal upon the complete delivery of the amount of liquid represented by each unit of value,

i. means for transmitting said second signal, including transmission timing means mounted for movement between initial and signal transmitting conditions, first driving means connected to be driven by said register and connected to drive said timing means so as to reach said signal transmitting condition after the beginning of, but before the completion of the delivery of the last unit of said total value, and

j. signal responsive means having normal and activated conditions, and connected to be activated in response to said transmitted second signal, means responsive to the activation of said signal responsive means, for restoring said second control means to said normal condition, and means for thereupon restoring said flow supplying means to said stop flow condition.

3,845,849

COIN TESTING DEVICE

Per Ake Andersson, Palmerstown, Ireland, assignor to International Cybernetics Machines Limited, Dublin, Ireland

Filed Jan. 17, 1973, Ser. No. 324,435
Claims priority, application Ireland, Jan. 17, 1972, 63/72
Int. Cl. G07f *3/02*
U.S. Cl. 194—97 R **19 Claims**

1. A coin acceptor/rejector for separating spurious coins from authentic coins of pre-selected denomination comprising:

1. spaced apart walls defining a coin entry chute for edgewise travel of coins therethrough;

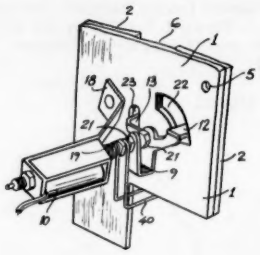
2. spaced apart walls defining a coin accept chute for edgewise travel of coins therethrough from the coin entry chute;

3. a coin exit sensing device mounted in the coin accept chute;

4. spaced apart walls defining a coin reject chute for edgewise travel of spurious coins therethrough from the coin entry chute;

5. a cradle pivotally mounted relative to the coin entry chute, the cradle having two spaced apart coin receiving surfaces which extend into the coin entry chute to intercept coins exceeding a preselected diameter and to pivot under the weight of such coins towards the coin accept chute;

6. solenoid means for moving the cradle relative to the coin entry chute to withdraw the coin receiving surfaces of the



cradle out of the coin entry chute the solenoid means having a core with an extension and the cradle being pivotally mounted on the extension;

7. a coin entry sensing device mounted in the coin entry chute and operatively connected to the solenoid means for moving the cradle, whereby the solenoid means causes the coin receiving surfaces of the cradle to be withdrawn a preset time interval after the coin entry sensing device has been activated; and

8. an alarm system operatively connected to the coin entry sensing device for activation and operation after a preset time and to the coin exit sensing device for de-activation, the preset time being greater than the time taken for an authentic coin to pass the coin exit sensing device and hence de-activate the alarm.

3,845,850

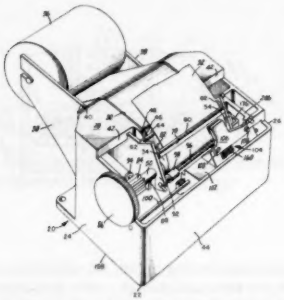
THERMAL PRINTER

Robert W. Herr; Edward D. Sigl, and Marion W. Aksamit, all of Fort Wayne, Ind., assignors to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed Feb. 22, 1973, Ser. No. 334,668
Int. Cl. G01d *15/10*
U.S. Cl. 197—1 R **20 Claims**

1. An apparatus for electrically recording successive lines of characters on a sheet of recording medium for visual display including a supporting frame, means mounted to said frame for holding said sheet in predetermined position to present a recording area upon which a line of characters are to be recorded, a recording head having a plurality of recording elements thereon which upon engagement with said recording area and selective energization form a character and visually record the same on said recording area, and means for supporting said recording head with said elements facing said recording area: means for mounting said supporting means on said frame for linear movement laterally with respect to said recording area and between first and second spaced end posi-

tions, said mounting means also mounting said supporting means for movement between a recording position with said elements engaging said recording area and an inactive position with said elements spaced therfrom, means coupled between said frame and said supporting means for incrementally moving said supporting means on said mounting means between a plurality of discrete positions between said first and second end positions, said discrete positions including in sequence said first end position, an intermediate at-rest position and an initial printing position, means coupled between said supporting means and said frame for moving said supporting means on



said mounting means to said inactive position in response to linear movement of said supporting means by said incremental moving means from said initial recording position to said at-rest position in a direction toward said first end position and for maintaining said supporting means in said inactive position in all linear positions thereof between said at-rest position and said first end position, and means coupled between said frame and said supporting means for maintaining said supporting means in said recording position in all said discrete positions thereof between said initial recording position and said second end position.

3,845,851

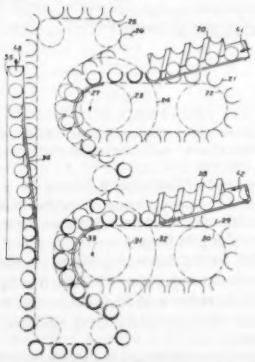
ARTICLE HANDLING APPARATUS

Alfred S. Decker; John R. Duff, both of Toledo, and Robert J. Heier, Whitehouse, all of Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Continuation of Ser. No. 819,556, May 8, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 179,180

Int. Cl. B65g *47/00*

U.S. Cl. 198—22 R **6 Claims**



1. In an article handling system, the combination comprising

a first conveyor having longitudinally spaced article engaging means thereon,

a second conveyor having longitudinally spaced article engaging means thereon,

the longitudinal spacing of said article engaging means on said first conveyor differing from the longitudinal spacing of said article engaging means on said second conveyor, means for guiding said first conveyor through a first arcuate path,

means for guiding said second conveyor in a second arcuate path having a different radius than said first arcuate path, portions of said arcuate path being parallel to one another whereby some of the article engaging means on one of said conveyors are radially aligned with some of the article engaging means on the other of said conveyors,

guide rail means defining a guide surface extending between the conveyors at said arcuate path portions for engaging and forcing articles radially between the article engaging means of one of said conveyors and the article engaging means of the other of said conveyors at their said arcuate path portions,

support means beneath the articles for supporting them during transfer between said first and second conveyors, said means for guiding said first and second conveyors about arcuate paths comprising a pair of rotary members rotatably mounted about a common axis,

one of said rotary members having a different diameter than the other,

said conveyors each being trained over one of the rotary members of said pair of members,

and one of said rotary members providing said support means beneath the articles for supporting them as they are being transferred between the first and second conveyors,

said article engaging means comprising generally C-shaped members,

said article engaging means of said first conveyor and said second conveyor having their open ends extending toward one another in said arcuate portions,

said means for guiding articles from one conveyor to the other comprising a guide rail positioned for forcing articles laterally from the article engaging means of one conveyor to the article engaging means of the other conveyor.

3,845,852

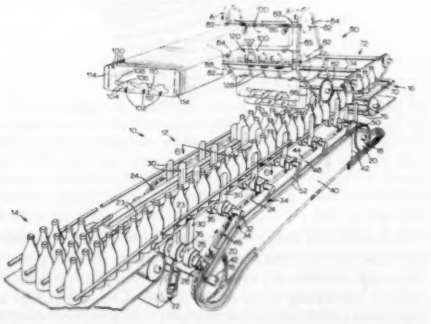
CARTON LOADER

Marinus J. M. Langen, 21 Chilcot Ave., and Jacobus J. Langen, 10 Ringway Crescent, both of Rexdale, Ontario, Canada

Filed Mar. 22, 1973, Ser. No. 343,724

Int. Cl. B65g *47/26*

U.S. Cl. 198—34 R **9 Claims**



1. A spacer device for use in arranging containers which are continually travelling in a predetermined path through a

spacer station into space apart groups of containers comprising

a. guide track means having a first forwardly inclined extent which continues in a second longitudinal extent which in turn continues in a third inclined extent which projects from the longitudinal extent on the same side of the plane of the longitudinal extent as said first inclined portion,

b. fence means mounted at spaced intervals on said guide track means for movement along said guide track means, said fence means projecting in a plane which is substantially normal to the plane of the longitudinal extent when travelling along said first, second and third extents of said guide track,

c. drive means for driving said fence means along said track at a uniform speed relative to said track whereby the fences are moved towards the plane of the longitudinal extent in travelling along said first angularly inclined portion into engagement with containers at linear speed in a direction of the longitudinal plane equal to the speed of travel of the containers, said fences being accelerated linearly as said fences pass onto the longitudinal extent of said track so as to move the containers engaged thereby forwardly of the preceding containers to space the containers on the longitudinal extent and thereafter moving said fence means along said third extent part of the path of travel of said containers to withdraw said fences from engagement with said container, and

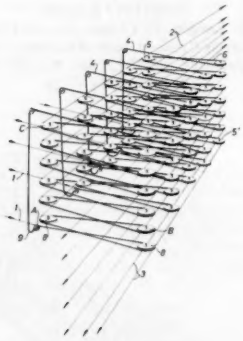
d. discharge means for engaging containers which have been spaced forwardly by said fences prior to withdrawal of said fences to discharge said container at a longitudinal speed sufficient to maintain a required space between the container being discharged and the next following containers.

3,845,853

SYSTEM FOR INTERCONNECTING CONTINUOUSLY OPERATING CONVEYOR PATHS

Janne Ragnvald Ejvin Wahren, Mastargrand 4, 592 00 Vadstena, Sweden

Filed June 14, 1972, Ser. No. 262,764
Claims priority, application Sweden, July 23, 1971, 9547/71
Int. Cl. B65g *37/00*
U.S. Cl. 198—78 **6 Claims**



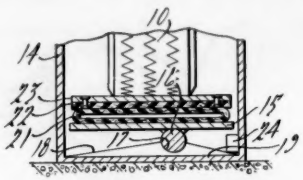
1. A conveyor system comprising a first group of incoming continuously operating conveyor belts a second group of outgoing continuously operating conveyor belts at least two endless connecting loops extending between said groups and each loop comprising a continuously operating conveyor belt guided over direction rollers so as to include a helical section having opposed curved first portions extending over said direction rollers and generally straight second portions extending between said curved portions, and a downwardly extending portion from top to bottom of said helical section, and coupling means for selectively connecting and disconnecting the connecting loop to and from the incoming and outgoing conveyor belts.

3,845,854

WHEEL CONVEYOR SYSTEM

Ced F. Brown, E. Rosebud Rd., R.R. No. 5, Mt. Pleasant, Mich.

Filed Nov. 24, 1972, Ser. No. 309,608
Int. Cl. B65g *15/00*
U.S. Cl. 198—184 **9 Claims**



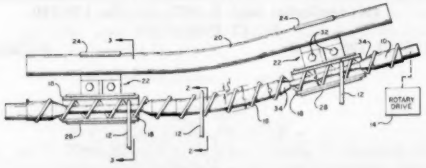
1. In a structure having a path on which the wheels of an automobile are advanced, trough means provided on one side of the path, a false bottom for said path on which the tires on one side of the automobile are advanced, means for advancing said wheels along said path, and means on the underside of the false bottom for supporting said false bottom and which permits the false bottom to tilt about a pivot point on said false bottom support means as the wheels pass thereover.

3,845,855

HELICAL SCREW-TYPE CONVEYOR

Karl E. Schwarz, Horseheads, and Donald E. Yeman, Elmira Heights, both of N.Y., assignors to BMT Manufacturing Corporation, Elmira, N.Y.

Filed Jan. 12, 1973, Ser. No. 322,970
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **4 Claims**



1. A helical screw-type conveyor rotatable to advance items suspended therefrom, said conveyor comprising in combination:

a. a central rod of first diameter over the major part of its length and having a portion of second diameter, substantially smaller than said first diameter, for a predetermined distance along its length;

b. said rod having tapered portions at each end of said second diameter portion, whereby the diameter changes gradually between said first and second diameters;

c. a helical element surrounding said rod and rotatable therewith;

d. bearing support members contacting said helical element on both the top and bottom thereof, at least the portion of said support members contacting the top of said helical

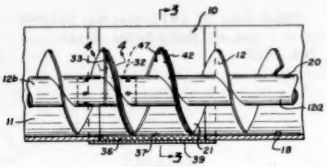
element being arranged adjacent said second diameter rod portion and having a length not exceeding said predetermined distance.

3,845,856

SCREW CONVEYOR FOR PARTICULATE MATERIAL

Alister C. Hume, Hudson Bay, Canada, assignor to MacMillan Bloedel Research Limited, Vancouver, British Columbia, Canada

Filed Dec. 27, 1972, Ser. No. 318,839
Claims priority, application Canada, Nov. 24, 1972, 157384
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **4 Claims**



1. A screw conveyor for particulate material, comprising a trough having a transversely curved inner surface along which particulate material is to be moved, a plurality of transversely curved wear plates in the trough and spaced apart longitudinally thereof, each plate having an inner surface spaced radially inwardly a little of the inner surface of the trough, a spiral conveyor in and extending longitudinally of the trough, said conveyor comprising a centre shaft and a spiral flight wound around and secured to the shaft, said flight having a spiral edge adjacent the inner surface of the trough, and a plurality of wear strips mounted on and extending along the spiral edge of the flight, said wear strips being longitudinally spaced apart and mounted on different portions of the spiral conveyor and there being one wear strip for and in sliding contact with each wear plate, said wear strips resting on the wear plates maintaining the spiral edge of the conveyor clear of the trough inner wall and forming the sole support for the conveyor within the trough; each of said wear strips comprising a flange secured to the spiral edge of said conveyor flight and extending transversely in the axial direction of the conveyor, and a wear strip removably secured to said flange, each wear strip comprising a wide flat band having opposite flat sides between edges thereof, and each wear strip being mounted with a flat side on the flange and a flat side facing radially outwardly of the conveyor to contact the adjacent wear plate; whereby the spiral conveyor can move the particulate material through the trough without obstruction and with very little deterioration of said particulate material.

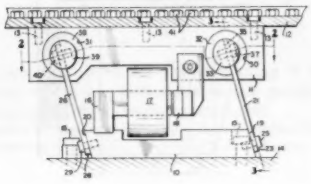
3,845,857

SPRING MOUNT FOR VIBRATORY FEEDER

Myron L. Doty, New Palestine, Ind., assignor to Moorfeed Corporation, Indianapolis, Ind.

Filed Oct. 19, 1972, Ser. No. 299,005
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 CA **8 Claims**

1. In a vibratory feeder including a stationary base member, a rail member, spring means supporting said rail member from said base member, a track secured to move with said rail member, and power-driven vibrator means comprising an element fixed relative to said base member and an element fixed relative to said rail member, one of said elements being the driver and the other being the driven element of said vibrator means, the invention in which said spring means comprises at least two bar-type springs spaced longitudinally relative to said members upon axes substantially equally inclined in a common direction from the vertical in the line of movement of said driven element, each of said springs having one end adjacent one of said members and its other end adjacent the other of said members, means for fixedly securing said one end to said one member, means for connecting said other end to said other member for relative resiliently yieldably resisted oscillation about a substantially horizontal axis transverse to the line of movement of said driven element, said



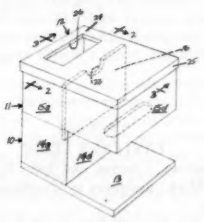
other member providing socket means and said connection means between said other end of each spring and said other member comprising rubberoid bushing means substantially nonrotatably received in said socket means, and a spindle penetrating said bushing means, said other end of each spring being fixedly secured to its associated spindle, said spindle including means for preventing rotation and gripping of said bushing means.

3,845,858

PACKAGE FOR DISPOSAL OF CHEWING GUM

Garry W. Jenkins, 1701 S. Ditmar St., Oceanside, Calif. 92054

Filed May 16, 1973, Ser. No. 360,809
Int. Cl. A45c *11/00*; **B65f** *1/00*
U.S. Cl. 206—233 **10 Claims**



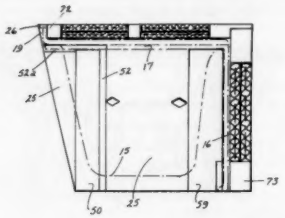
1. A package for holding tissue in which gum is to be wrapped and also holding gum which has been wrapped in the tissue, which comprises a lower casing having a bottom wall, side walls and an open top, said lower casing serving as a storage repeptacle for gum which has been wrapped in tissue, a middle casing having side walls and also a transverse vertical partition dividing the middle casing interior into a rearward section and a forward section, and a top plate which covers the entire middle casing and has an opening therein disposed over said rearward section, said rearward section being open at its top and at its bottom to serve as a passageway from said opening down to said lower casing, said forward section serving as a compartment for receiving a package of tissues and retaining it therein, and said forward section having an access opening for withdrawal of tissue therethrough.

3,845,859

SHIPPER PACKAGE

Ross J. Dornbush, 736 E. Grand Blanc Rd., Grand Blanc, Mich. 48439

Filed July 17, 1972, Ser. No. 272,359
Int. Cl. B65d *85/54, 5/32*
U.S. Cl. 206—320 **1 Claim**



1. In a package for protecting and supporting a bath tub which package has right and left end caps and a sleeve-type wrapper, the improvement wherein said end caps are each formed from a one-piece blank and each have

A. an end panel (**25**);

B. a re-inforced upper edge walls (**72**) extending at 90° to panel (**25**) formed from a plurality of hinged panels folded to provide a multi-ply wall and adapted to overly the front top surface of a tub and function as a cushion layer to protect the vitreous enamel thereof;

C. re-inforced front edge walls (**73**) extending at 90° from panel (**25**) formed from a plurality of hinged panels folded to provide a multi-ply wall and adapted to overly the front skirt (**16**) of a tub and function to space front panel (**22**) of wrapper (**12**) from contact with the vitreous enamel on said front skirt;

D. re-inforced end support walls (**50** and **59**) connected to panel (**25**) by hinge panels (**45** and **46**) overlying end spacers (**52** and **61**) adjacent the rear and front respectively, of said end panel (**25**) and spaced from said upper edge wall to provide supports for suspending a tub (**15**);

E. said end spacers (**52** and **61**) being hinged at lateral edges of said support walls (**50** and **59**) and folded between said end panel (**25**) and said support walls;

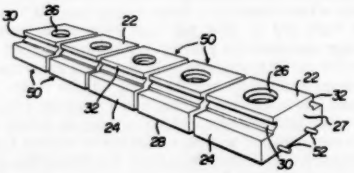
F. said right end cap being a mirror image of said left end cap.

3,845,860

FASTENER STRIP

Harold A. Ladouceur, Livonia, and John H. Matthews, Royal Oak, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 130,335, April 1, 1971, Pat. No. 3,711,931. This application Nov. 24, 1972, Ser. No. 309,545
Int. Cl. B23p *17/00*; **B65d** *79/00, 85/20*
U.S. Cl. 206—338 **21 Claims**



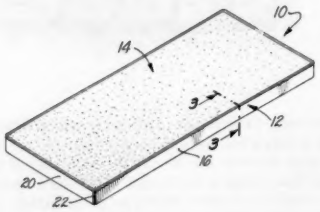
1. A continuous strip of nuts, comprising, in combination, a plurality of generally aligned nuts, each nut having a bore therethrough generally perpendicular to the axis of said strip, and an end face perpendicular to the axis of said bore and a pair of generally linear grooves in said nut end face, on either side of said bore and generally parallel to the axis of said strip, and a continuous frangible element disposed in each of said grooves, bridging adjacent nuts, and said nut end face including a portion deformed over each of said frangible elements to retain said nuts on said frangible elements in a continuous strip.

3,845,861

BOX END STRUCTURE

Anthony J. Fieri, Rolling Hills Estates, Calif., assignor to American Forest Products Corporation, San Francisco, Calif.

Filed June 28, 1972, Ser. No. 267,059
Int. Cl. B65d *81/04, 85/34*
U.S. Cl. 206—523 **4 Claims**



1. A box end structure to be utilized in boxes in which two of said end structures are secured together so as to be spaced from and located parallel to one another by at least two box sides and a box bottom, in which the improvement comprises: said end structure including an integrally formed, structurally rigid housing and a solid, porous, lightweight filling,

said housing being formed of a high impact strength styrene polymer and having parallel top and bottom strips located so as to be spaced from and parallel to one another and having two side strips connecting the ends of said top and bottom strips at corners into a frame structure in which the edges of all of said strips are located in two parallel planes, said housing also having wall means located within the perimeter of said frame structure connecting all of said strips to reinforce and hold said frame structure into a structural unit, said wall means including a web-like cross wall extending between said strips, and internal wall means connected to said web-like cross wall and said strips,

said filling being formed of an expanded styrene polymer composition and located within the interior of said housing in contact with all of said strips and said wall means so as to completely engage and fill the interior of said frame structure so that said filling is held within said housing, said filling serving to provide flat front and rear surfaces at the sides of said frame structure in said planes.

3,845,862

CONCENTRATION OF OXIDE COPPER ORES BY FLOTATION SEPARATION

Stephen E. McGuire; Carl D. Kennedy, and John C. Stauter, all of Ponca City, Okla., assignors to Continental Oil company, Ponca City, Okla.

Filed Jan. 4, 1973, Ser. No. 321,087
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 **8 Claims**

1. In a flotation separation process wherein oxide copper ores in subdivided form are concentrated by slurrying said ores in an aqueous solution of a flotation reagent followed by

generating gas bubbles in the slurry to float the oxide copper and recovering the concentrated oxide copper from the surface of the slurry, the improvement therein which comprises employing a quaternary salt as a flotation reagent, said quaternary salt being defined by

$$(R)_4\ Y^+\ X^-$$

wherein Y is a nitrogen or phosphorus atom; X is a bromine, chlorine, or iodine atom; and

each R is, independently, an alkyl radical having one to 30 carbon atoms; or

a $(R')_r$ — — $(R'')_s$—group

wherein "*r*" is an integer of 1 or 2; "*s*" is 0 or 1;

R′ is hydrogen or an alkyl radical having 1 to 30 carbon atoms; and

R″ is an alkylene radical having one to 15 carbon atoms; provided that the total number of carbon atoms of $(R)_4\ Y^+\ X^-$ is in the range of 10 to 45.

3,845,863

PULP SIFTER WITH CLEANING MEANS

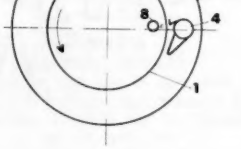
Risto Martti Juhani Savia, Inkeroinen, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Mar. 21, 1972, Ser. No. 236,709

Claims priority, application Finland, Mar. 25, 1971, 862/71

Int. Cl. B07b *1/52*

U.S. Cl. 209—303 **9 Claims**



1. An improved sifting device for pulp and the like having a chamber with inlet means for the pulp; in the chamber and rotatably journalled thereto a cylindrical sieve plate defining an accept collecting space and having outlet means for the accept; means for rotating the cylindrical sieve plate about a vertical axis; and sieve cleansing means fixedly attached to the chamber across the outer sieve plate surface, said sieve cleansing means comprising a pipe having an opening at the side towards the sieve plate surface for removing reject therefrom, the improvement comprising: reject detaching means adjacent said sieve plate and positioned at the front longitudinal edge of the pipe, and in communication with said opening blocking means at the rear longitudinal edge of the pipe for substantially preventing the pulp feed from moving other than in the rotational direction of said sieve plate, said blocking means being adjacent said sieve plate, said detaching and blocking means positioned wholly at opposite sides of the pipe opening and in spaced relation to said sieve plate.

3,845,864

DISPLAY SHELVING

Wilhelm Heinrich, D-3441, Oberhone, Germany

Filed July 5, 1973, Ser. No. 376,621

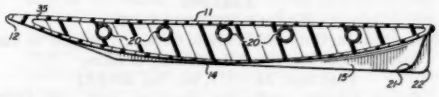
Int. Cl. A47f *5/00*

U.S. Cl. 211—153 **11 Claims**

1. A unitary molded display shelf formed from plastic material comprising:

an elongated solid support member having a substantially flat top surface and a convex bottom surface forming relatively thin front and rear edges,

each end of said member being provided with a flange integral with and extending laterally from said top surface



and provided with a slot extending along its free edge laterally of the longitudinal axis of said member for receiving a supporting bracket therein, and

a plurality of spaced reinforcing means embedded in said member and arranged to extend longitudinally thereof.

3,845,865

MARINE CARGO HANDLING CRANE

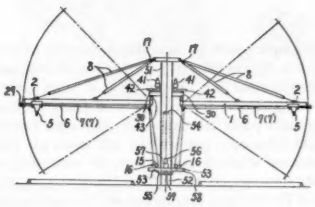
George Thomas Richardson Campbell, and Toshishige Kasuga, both of Tokyo, Japan, assignors to Algoship International Limited, Nassau, Bahamas

Division of Ser. No. 883,002, Dec. 8, 1969, Pat. No. 3,658,787. This application Mar. 7, 1972, Ser. No. 232,644

Claims priority, application Japan, Dec. 27, 1968, 43-96323; Apr. 10, 1969, 44-27949; Aug. 26, 1969, 44-81151

Int. Cl. B66c *21/06, 23/52*

U.S. Cl. 212—57 **9 Claims**



1. A cargo handling crane comprising a main two section post, a first section of which is fixed and a second section of which is mounted on a turntable rotatable about said first section of the post, a main outrigger on said second section of the post, said main outrigger extending on opposite sides of the post in a plane normal to the axis of the post, a pair of booms mounted one at each end of the said main outrigger, means to pivot each of said booms (a) for slewing of the booms and (b) for topping the booms, a hoisting trolley on each of said booms, the said trolleys adapted for travel along the length of their respective booms, means for separately slewing each boom, individual rope means for separately topping each boom, for transversing each of said hoisting trolleys on its respective boom and for hoisting loads via said hoisting trolleys winch means on the said turntable for individually paying-in and paying-out said rope means,

said slewing means on each boom comprising a slewing rope means passing over pulleys mounted on a further outrigger extending from said post on either side of the said main outrigger, a boom outrigger extending at right angles on either side of the centerline of the boom and to which one end of the pairs of slewing ropes are secured, an adjusting arm pivotally mounted on opposite ends of the said further outrigger on said second section of the post, each of said adjusting arms including a pair of sheaves mounted at each end thereof, stop means on each of said adjusting arms limiting the movement of the arms

in the direction of said second section of the post, the said slewing ropes being laid about said sheaves, the said adjusting arms taking up a position during paying-out and paying-in to automatically take up slack in the slewing ropes.

3,845,866

TELESCOPIC CRANE JIB

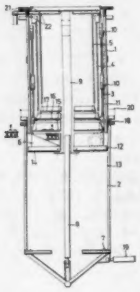
Harry Eucken, Hochdahl-Millrath, Germany, assignor to Leo Gottwald KG, Dusseldorf-Holthausen, Germany

Filed Sept. 25, 1973, Ser. No. 400,652

Claims priority, application Germany, Sept. 28, 1972, 2247491; Oct. 7, 1972, 2249309

Int. Cl. B66c *23/02*

U.S. Cl. 212—64 **31 Claims**



1. In a telescopic crane jib including a plurality of individual telescopic parts, means for extending and retracting said parts when the longitudinal axis of said jib is at least substantially vertical, locking means for locking said parts positively together when said parts are extended, and a jib housing surrounding said telescopic parts when said parts are retracted, the improvement wherein said means for extending and retracting said telescopic parts is a fluid pressure operated cylinder mounted for vertical movement within said housing and there is means associated with the lower end of said cylinder below the lowest of said telescopic parts for guiding said cylinder vertically in a lower portion of said housing, and said locking means are situated at the ends of said telescopic parts and include means for locking said parts together end to end.

3,845,867

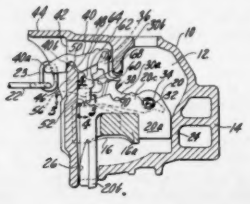
CAR COUPLER

Karl J. Jwuc, North Royalton, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 16, 1973, Ser. No. 351,166

Int. Cl. B61g *3/06*

U.S. Cl. 213—121 **7 Claims**



1. A car coupler having a chambered head, a knuckle pivoted to said head for movement from closed position to open position, a lock in said head for locking said knuckle in closed position, a lever in said head operatively connected to said lock for raising said lock out of locking position and link means for actuating said lever, said head having a shelf underlying an end of said lever for supporting the lever when said lock is in locking position, said lever having a fulcrum bearing to permit vertical pivoting of said lever upon actuation of the lever to raise said lock, a socket in said head in spaced opposed relation to said bearing, and a projection in said head having a convex surface adjacent said socket, said surface being in spaced opposed relation to said bearing, said lever upon actuation by said link means being initially movable transversely of the coupler into position in which said bearing engages said convex surface and is cammed into said socket, after which said lever is caused to pivot relative to said socket to raise said lock out of locking position.

3,845,868

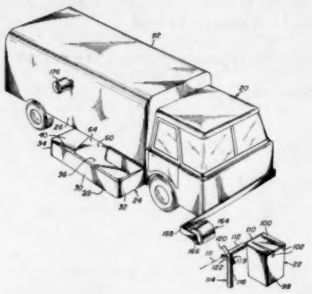
NONSTOP REFUSE COLLECTION SYSTEM

Glenn R. Myers, 729 W. Vernan, Phoenix, Ariz. 85007

Continuation of Ser. No. 87,445, Nov. 6, 1970, abandoned. This application Apr. 19, 1972, Ser. No. 245,679

Int. Cl. B65f *3/02*

U.S. Cl. 214—42 R **9 Claims**



1. In a nonstop refuse collection system,

a. a nonstop collection vehicle movable along a collection path, said vehicle adapted for receiving refuse therein;

b. at least one refuse container positioned along the collection path, said container having a refuse receiving state and a refuse dumping state;

c. a refuse storage enclosure movable with said vehicle;

d. a refuse receiving tray mounted on said vehicle and exposed to extend laterally therefrom;

e. emptying means positioned in said vehicle and in said tray for removing refuse from said tray;

f. transfer means in said vehicle for receiving refuse from said emptying means and transferring the refuse to said storage enclosure, and

g. actuation means on said vehicle for activating said container from the refuse receiving state to the refuse dumping state when said vehicle is adjacent to said container.

3,845,869

LOADING AND UNLOADING DEVICE

Blaine E. Sowers, Grabill, and Vaughn E. Hunnicutt, Fort Wayne, both of Ind., assignors to North American Van Lines, Inc., Ft. Wayne, Ind.

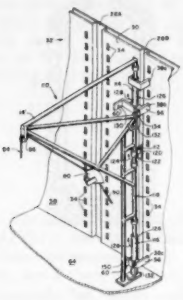
Continuation-in-part of Ser. No. 224,094, Feb. 7, 1972, Pat. No. 3,774,788. This application Apr. 30, 1973, Ser. No. 355,311

Int. Cl. B66c *23/02*

U.S. Cl. 212—65 **17 Claims**

1. A loading and unloading device comprising a boom, means pivotally connected to said boom for securing the same

to the sidewall of a cargo compartment, said means including a first portion to be received in a complementary shaped recess adjacent to a row of vertically spaced perforations in said sidewall and a second portion including a plurality of first hook elements for latching to said sidewall remote from an access opening thereto and holding said first portion in said recess, and a second hook element extending in a direction opposite said first hook element for latching to said sidewall



adjacent an access opening and holding said first portion in said recess, said first and second hook elements each including a portion adapted to be laterally, slidably received in predetermined ones of said perforations and to vertically, slidably engage a portion of said sidewall, said boom being pivotally swingable in relation to said securing means about an axis which is generally vertical when said boom is latched to said sidewall, said securing means maintaining said axis in said generally vertical position.

3,845,870

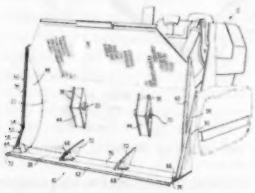
LANDFILL BUCKET

Willard E. Balderson, and Billy D. Birk, both of Wamego, Kans., assignors to Balderson Inc., Wamego, Kans.

Filed Mar. 27, 1972, Ser. No. 238,209

Int. Cl. E02f *3/70*

U.S. Cl. 214—145 **17 Claims**



1. A landfill bucket for mounting on lift arms and tilt linkages of a loader comprising:

a pair of spaced hinge plates having means for being pivotally connected to loader lift arms and tilt linkages;

a floor member which has a substantially planar area including a length in the direction of forward movement of the loader and extending across the width of the bucket;

means connecting a rearward portion of said floor member to said hinge plates;

a substantially flat plate having an upper surface in substantial alignment with the upper surface of said floor member and extending across the width of said bucket, said flat plate having a forward cutting edge and a rear surface held in abutting relationship with a forward edge of said floor member;

a bucket wrapper member having a generally cylindrical surface with a horizontal axis, the lower end of said curved surface intersecting with said floor member at an angle along a line which is spaced from both said rearward portion and said forward edge of the floor member and being welded to the floor member along said line; and

a pair of substantially identical side plates on opposite sides of said bucket, said plates having their upper portions secured to an upper portion of said bucket and their lower edges secured along opposite sides of said floor member and said flat plate, said side plates having a lower portion leading edge that extends upwardly at an oblique angle relative to the upper surface of said flat plate and an upper portion leading edge that extends substantially perpendicular to the upper surface of said flat plate to thereby form a recess at a junction between said lower and upper portions, the upper surface of said flat plate extending in a forward direction beyond the leading edges of the lower portions of said side plates.

3,845,871

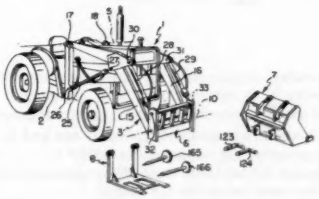
EXCAVATING APPARATUS

Franklin M. DiLillo, 4405 Ardmore Rd., and Michael A. DiLillo, 4293 Ardmore Rd., both of South Euclid, Ohio 44121

Filed Jan. 15, 1973, Ser. No. 323,961

Int. Cl. E02f *3/70*

U.S. Cl. 214—145 **10 Claims**



1. An excavating apparatus comprising,

a lift assembly mounted on said chassis,

a load moving member mounted on said lift assembly,

a coupling assembly between the lift assembly and the loading moving member for mounting said load moving member on said lift assembly,

said coupling assembly includes a locating coupling and a locking coupling for detachably mounting said load moving member in interlocked relation on said lift assembly, said locating coupling includes interfitting locating elements engageable with one another to enable alignment of said locking coupling in its locking position,

said locking coupling includes interfitting locking elements engageable with one another in the locked position to maintain said locating elements in their interfitted engaged position for maintaining said load moving member in the interlocked mounted position on said lift assembly and disengageable from one another to enable said locating elements to be released from their interlocked relation and to enable detachment of said load moving member from said lift assembly,

said load moving member is an excavating bucket,

said locating elements include a locating bar on said lift assembly and locating hooks mounted in laterally spaced relation on said bucket and including downwardly opening slots therein for receiving said locating bar therein,

said locking elements include a pair of yokes on said bucket and locking projections on said lift assembly, and

said locking yokes are disposed downwardly from said locating hooks and in laterally spaced relation on said bucket each having a rearwardly opening recess for re-

ceiving a respective one of said locking projections therein, and

a pair of locking pins each supported on a respective one of said locking yokes and extending across said recesses for interlockingly retaining said projections in said recesses and retain said locating bar within the slots in said locating hooks to prevent disengagement of said load moving member from said lift assembly.

3,845,872

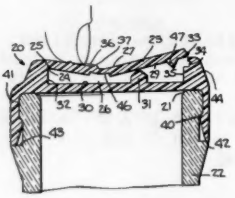
CONTAINERS AND SAFETY CLOSURE THEREFOR

Edward Johnson Towns, Normandy Heights Rd., Convent Station, N.J. 07961, and Anthony Thomas Brindisi, 4 Charles Dr., Fairfield, N.J. 07006

Continuation-in-part of Ser. No. 262,419, April 9, 1973, abandoned. This application Apr. 9, 1973, Ser. No. 349,302

Int. Cl. A61j *1/00;* **B65d** *55/02*

U.S. Cl. 215—9 **19 Claims**



1. In a safety closure made of plastic for a container of the type having a closure member with an integral pull tab mounted within a recess in the top surface of the member and swingable about a hinged connection at one end to an open, grasping position, the improvement wherein:

all edges of the tab are in close fitting abutment to the edges of the recess when the tab is shut;

tongue and groove interengagement means between the tab and at least one surface forming said recess are provided to hold the tab shut;

at least a portion of the recess is deeper than the thickness of the tab; and

a fulcrum means is located adjacent said deeper portion for supporting the tab,

the dimensions of said tab, said recess and said fulcrum means being so proportioned in respect of the material from which said closure is made that an inward force on the tab at a point overlying said deeper portion of at least about four pounds is required to cause the tab to deflect inward at that point and thus pivot about the fulcrum means thereby raising an edge of the tab on the other side of the fulcrum means above the top surface of the closure to permit swinging the tab to the open, grasping position.

3,845,873

VACUUM INSULATED CONTAINER

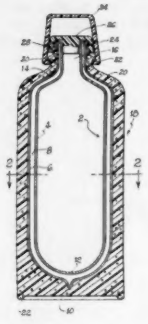
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Feb. 9, 1973, Ser. No. 331,026

Int. Cl. A47j *41/02*

U.S. Cl. 215—13 R **2 Claims**

1. A vacuum insulated container comprising: a double-walled filler with the space between the walls substantially evacuated so as to provide a vacuum insulating space therebetween and having a closed bottom at one end and an open throat leading to an opening at the other end for filling and pouring, a jacket of substantially greater thickness than the walls of the filler formed solely from a foamed plastic material having a relatively impervious outer skin encompassing and engaging the outer wall of the filler at its bottom and sides, said jacket is provided with first holding elements formed on the outer surface thereof adjacent said opening to hold a stopper in said opening, and second holding means formed on



the outer surface of said jacket below said first holding means whereby a cup may be inverted and placed on the container to cover a stopper and be retained on said jacket.

3,845,874

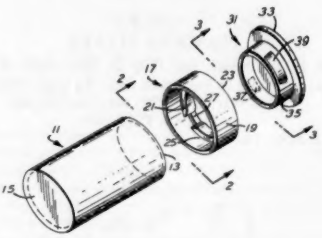
SAFETY VIAL AND CAP THEREFOR

Douglas R. Robbins, 37 West Minster, and Samuel B. Robbins, Jr., 19 Beechview, both of Jamestown, N.Y.

Filed Nov. 8, 1973, Ser. No. 413,922

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—214 **9 Claims**



1. A safety vial and cap therefor, comprising in combination:

a generally cylindrical container having uniform wall thickness, said container being closed at the bottom and open at the top;

a double ring shaped member having an outer depending ring shaped portion, the inner diameter of which is equal to or slightly less than the outer diameter of said cylindrical container and an inner depending ring shaped portion, the outer diameter of which is equal to or slightly greater than the inner diameter of said cylindrical container with said inner depending ring shaped portion having a slot therein, said outer depending ring portion and said inner depending ring shaped portion being joined at the top to thereby form a generally cylindrical slot therebetween adapted to have inserted therein the top of said cylindrical container;

means for inserting the open end of said generally cylindrical container in and affixing the same to the cylindrical slot in said double ring shaped member;

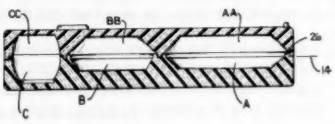
a plug type cap comprising a top portion having a diameter approximately equal to the outer diameter of the outer depending ring shaped portion of said double ring shaped member and a cylindrical portion open at the bottom depending from said top portion and having an outer diameter approximately equal to the inner diameter of the inner depending ring shaped portion of said double ring shaped member, further including first and second protuberances on opposite sides of the bottom of the cylindrical sector of said plug type cap, a first one of said protuberances having an angular dimension approximately equal to the dimension of the slot in the inner depending ring shaped portion of the double ring shaped member.

3,845,875

FOOD SERVICE TRAY

Carl L. Douglas, 1220 Fox Hills Dr., Indianapolis, Ind. 46208; William J. Evans, Indianapolis, Ind.; Ronald J. Kiess, Greenfield, Ind., and Robert A. Sutton, 5030 E. Pleasant Run Pky., Indianapolis, Ind. 46201, assignors to Said Carl L. Douglas, by said Evans and Kiess and said Robert A. Sutton, by said Evans and Keiss, both of Indianapolis, Ind., part interest to each

Filed July 13, 1972, Ser. No. 271,546
Int. Cl. B65d *1/24, 21/02*
U.S. Cl. 220—20 **2 Claims**



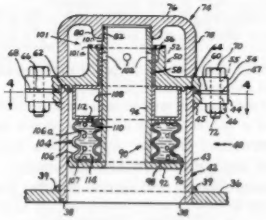
1. A food service tray assembly comprising:
a. a base, said base comprising a urethane foam shape of a polyurethane rigid closed cell foam, said shape having at least one coating all over the exterior of the foam;
b. a cover different from said base and mounted on top of said base; said cover comprising a urethane foam shape of a polyurethane rigid closed cell foam, said shape having at least one coating all over the exterior of the foam;
c. said base having a plurality of cavities therein, said cavities being of a size and shape to accommodate conventional sizes and shapes of permanent and disposable dishware;
d. said cover having a plurality of cavities therein;
e. each of said cavities of said cover being in registry with one of said cavities in said base to form a food storage compartment;
f. said cover and base having mating perimetrical thermal barriers around certain of said registering cavities, to inhibit lateral heat transfer between adjacent cavities;
g. said coaver having means to inhibit vertical heat release from said food storage compartments;
h. the overall height of said assembly being less for a distance along at least one margin thereof than elsewhere to provide, in a stack of assemblies, finger receiving spaces between each assembly and the assembly next below it, and to facilitate reception of said cover and said base separately in the dish rack of an institutional dishwasher machine; and
i. wherein one side of said assembly is irregular with respect to the others to facilitate identification of correct registry of said cover with said base in assembly thereof;
said cover having lug means projecting upward therefrom, and said base having upwardly extending recess means therein,
whereby said assembly is securely stackable with like assemblies, the lug means of said cover projecting into the recess means of the base of the assembly next above it, and the recess means of said base receiving the projecting lug means of the cover below it;
one of said cavities in said cover having a corner therein disposed in vertical projection with a corner in said one lug, whereby a plurality of covers like said cover is stackable, with the upwardly projecting one lug of each received in the corner of a cavity of the cover next adjacent thereto.

3,845,876

PRESSURE TANK SAFETY VENT SYSTEM

Robert F. Needham, and Dwaine G. Souchek, both of Saint Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,523
Int. Cl. B65d *51/16*
U.S. Cl. 220—203 **43 Claims**

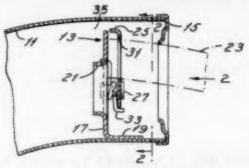


1. A pressure tank safety vent system comprising:
a hollow housing adapted to be in communication with an opening in said pressure tank;
a vent member mounted within the hollow portion of said housing; said vent member having a vent opening therein in communication with the opening in said housing, and having at least one port in communication with said vent opening;
said vent member being movable within said hollow portion between first and second positions, in said first position said housing preventing said port from venting said pressure tank and a second position wherein said port is adapted to vent said pressure tank;
said housing further having mounted therein a resilient assembly comprising:
resilient means biased into an extended position; first and second chambers at least one of which contains a vent controlling fluid, said chambers being in fluid communication by means of at least one vent controlling channel;
said resilient assembly being in mechanical engagement with at least a portion of said housing;
whereby during a pressure build-up in said pressure tank, the tank pressure is applied to said resilient assembly and said vent controlling fluid will pass through said vent controlling channel, and in the event the pressure build-up continues for a time sufficient to transfer a substantial portion of said fluid from said first channel to said second channel, said vent member will move into said second position and vent said pressure tank.

3,845,877
INLET INSERT

Lawrence E. Arnett, Wayne, and Earl M. Wiggins, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1972, Ser. No. 241,620
Int. Cl. B67c 3/00; F16l 33/00
U.S. Cl. 220—86 R 5 Claims

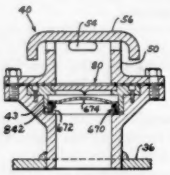


1. A tank inlet pipe insert assembly to selectively accept and reject pump nozzle spouts on the basis of outer diameter magnitude, said insert assembly comprising:
- a first member secured to the inlet pipe and forming a partial closure thereof, said first member including a portion substantially perpendicular to the axis of said inlet pipe and having an opening formed therein
- a second member including a portion substantially parallel to said portion of said first member,
- means connecting said second member to said first member to pivot about an axis eccentric to the axis of said inlet pipe,
- a portion of said second member being positioned at least in part over said first opening,
- a second opening formed in said second member of a diameter of a magnitude to accept a nozzle spout of a first predetermined diameter and reject a nozzle spout of a second larger predetermined magnitude,
- spring means biasing said second member toward a normal position at least partially obstructing said first opening, said second member being displaceable from said normal position to a position in which said second opening is aligned with said first opening,
- said second member having dimensions less than the interior diameter of said inlet pipe to permit displacement of said second member relative to said inlet pipe.

3,845,878
SAFETY VENT SYSTEM FOR TANKS

Edwin S. Carlson, Saint Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,350
Int. Cl. B65d 25/00; F16k 17/14
U.S. Cl. 220—89 A 21 Claims

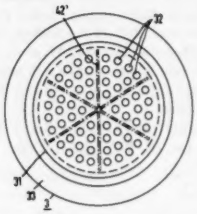


1. A safety vent system for use in a tank for transporting chemicals comprising:
- at least one hollow member mounted in communication with an opening in said tank;
- a member rupturable at designed pressure mounted in at least one of said hollow members; and
- resilient means comprising a bellows mounted in cooperation with said rupturable member to absorb energy resulting from surge pressures occurring in said tank.

3,845,879
SAFETY FITTING

Berthold Dernbach; Ewald Jurisch, both of Erlangen, and Helmut Landgraf, Tennenlohe, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 26, 1973, Ser. No. 344,581
Claims priority, application Germany, Apr. 6, 1972, 2216615
Int. Cl. F16k 17/16; B65d 47/36
U.S. Cl. 220—89 A 10 Claims

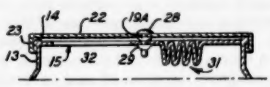


1. A safety fitting for use in pipe lines and the like comprising:
- a. a substantially flat rupture disc containing a plurality of radial grooves extending from the center to a predetermined distance from the rim of the disc thereby leaving annular area of undiminished cross section near the rim;
- b. a support member having a plurality of holes therein patterned so as to provide solid areas corresponding to the location of the grooves in said rupture disc; and
- c. means to support said rupture disc and said support member within a pipe line with said rupture disc resting against said support member with its grooves aligned with the solid areas of said support member, and facing the side of said pipe line in which a normally higher pressure is expected, whereby a higher pressure on said normal side of said line will press said rupture disc against said support member and prevent flow through the safety fitting but a higher pressure on the support member side of said safety fitting will cause said disc to rupture along said grooves and permit a flow through said safety fitting.

3,845,880
CAN FOR LIQUID

Mark F. Cole, Jr., 2167 Roland Way, Eugene, Oreg. 97401

Filed May 17, 1973, Ser. No. 361,177
Int. Cl. B65d 17/00
U.S. Cl. 220—258 9 Claims



1. In a can
- a. a cylindrical body presenting upper and lower ends,
- b. an inner top affixed to said upper end and having a scored area defined by a pair of spaced arcuate lines and an end

line that are weakened, and a plurality of spaced radial lines in said scored area that are weakened,

c. an outer top rotatably mounted on said body above said inner top and having a scored area defined by a pair of spaced curved lines that extend in substantially the same direction as the arcuate lines on the inner top and an end line that are weakened,

d. means for securing together the scored area portion at substantially the end line of the inner top with the scored area portion at substantially the end line of the outer top

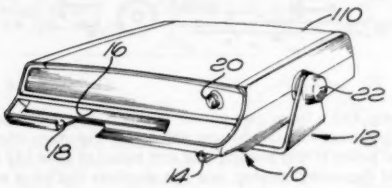
e. a bottom closing the lower end of said body.

3,845,881

LIGHTED-CIGARETTE DISPENSING MACHINE

William R. Sachko, 348 Sienega Dr., Fullerton, Calif. 92635

Filed July 18, 1973, Ser. No. 380,324
Int. Cl. B65d *83/00*
U.S. Cl. 221—144 **5 Claims**



1. A lighted-cigarette dispenser comprising:

a magazine means including a rotatable member defining a plurality of slots for receiving a plurality of cigarettes for containing a plurality of cigarettes at separate locations;

a ciagarette carriage means mounted for reciprocalmotion strokes along a path aligned with the axis of a received cigarette carried thereon;

a lighter means for igniting a cigarette;

an actuating means including, a power arm to move said carriage in an initial stroke of reciprocal motion to receive a carried cigarette from said magazine means, and a dash pot mechanism for moving said carriage in a return stroke of reciprocal motion to abut said lighting means then discharge said carried cigarette;

means connecting said actuating means to control energization of said lighting means; and

means connecting said dash pot mechanism to provide an air current to ignite said carried cigarette.

3,845,882

SPRING CAGE FOR USE IN A TABLET DISPENSING RECEPTACLE

Eduard Hass, 1010 Wein, Parkring 10, Vienna, Austria

Filed Oct. 25, 1972, Ser. No. 300,486
Claims priority, application Austria, Nov. 9, 1971, 9678/71
Int. Cl. B65h *1/08*
U.S. Cl. 221—279 **5 Claims**

1. A spring cage in combination with a receptacle for receiving and sequentially dispensing individual shaped bodies from a stack of like ones of said shaped bodies received in the receptacle, the receptacle comprising a housing having a dispensing end, and the spring cage comprising a structural unit consisting of a spring abutment having an aperture, a support bottom for carrying the stack of shaped bodies, a compression spring held between the abutment and support bottom, and a hook having a head releasably engageable with the aperture of the abutment and a stem extending from the hook head through the aperture to the support bottom for releasably interlocking the abutment and support bottom for insertion as a unit into the receptacle housing, the hook being deformable to disengage the hook head from the aperture and the compression spring pressing the stack of shaped bodies towards the dispensing end to place sequential uppermost one of the shaped bodies of the stack into a dispensing position

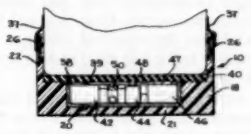
when the unit has been inserted and the interlocking of the abutment and support bottom has been released by disengagement of the hook head from the aperture, and a click stop fixedly holding the spring cage in the receptacle housing.

3,845,883

MEASURING APPARATUS

Edward P. Johnson, 1579 Bucklin Ave., and Ross E. Waite, 1675 Argyle Ave., both of La Salle, Ill. 61301

Continuation-in-part of Ser. No. 11,097, Feb. 13, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,874
Int. Cl. B67d *5/22*
U.S. Cl. 222—30 **2 Claims**



1. An apparatus for indicating the amount of flowable material dispensed from a container having an outlet in the upper portion thereof when the container is held in a pouring position comprising:

a housing secured to the container;

timing means within said housing comprising a mechanical watch mechanism having a rotationally oscillating escapement fly wheel, said timing means for timing incremental time periods, each said incremental time period corresponding to a unit of volume of the flowable material flowing from the outlet per incremental time period when the container is held in the pouring position;

position responsive activating means within said housing comprising a roller ball positioned adjacent said fly wheel so that said roller ball will contact said fly wheel to prevent rotational oscillation of said fly wheel when the container is in a non-pouring position and will roll away from said fly wheel to permit rotational oscillation of said fly wheel when the container is in a pouring position;

recording means within said housing for recording the total number of incremental time periods timed by said timing means;

visual indicating means within said housing for providing externally viewable numerical representations of the total number of incremental time periods recorded by said recording means, said visual indicating means comprising

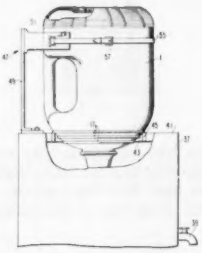
an indicator hand rotated by said watch mechanism and a watch face divided into increments of volume so that when said indicator hand is rotated by said watch mechanism the total volume of flowable material flowing from the container is visually indicated.

3,845,884

BOTTLE WITH AN INVERTED PORTION SUPPORT AND SEALING RING

Hall and Myers, 613 Richard Rd., Wayne, Pa. 19087

Filed June 5, 1973, Ser. No. 367,270
Int. Cl. B67d *5/64*
U.S. Cl. 222—173 **8 Claims**



1. A bottle adapted to provide liquid for a liquid dispensing apparatus, said liquid dispensing apparatus comprising an upper surface having therein an orifice whose inner surface is bounded by a sealing ring which forms a primary vertical support for the bottle,

said bottle comprising a neck section, a taper section, and a body section, wherein the body section is of a substantially larger cross-section than said neck section, said taper section having two ends, one end joining to said neck section and the other end joining to said body section thereby to locate said taper section between the neck and body sections,

said taper section being provided with at least one annular ridge located a substantial distance from the end of said taper section which joins to the neck section, said ridge extending around the entire periphery of said taper section, said ridge being an integral part of the outer wall of said taper section and being of a dimension sufficient such that when said bottle is inverted for dispensing a liquid by insertion of the neck section through said orifice of said dispensing apparatus, said annular ridge bears upon said sealing ring and said sealing ring supports the weight of the bottle, thereby forming a seal to prevent impurities from entering said apparatus through said orifice.

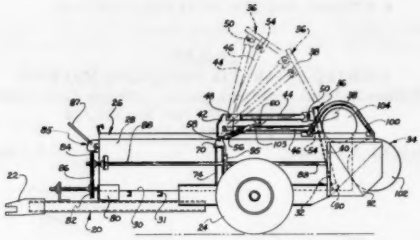
3,845,885

MANURE SPREADER

Edward A. Reed, Galion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Filed Dec. 22, 1972, Ser. No. 317,386
Int. Cl. A01c *15/12*
U.S. Cl. 222—176 **1 Claim**

1. A manure spreader comprising, in combination, a wheeled frame, body means on said frame and including side walls, a bottom wall, and a rear dispensing opening, beater means on said frame means rearwardly of said dispensing opening for discharging loaded material from said dispensing opening, arm mounting bracket means extending upwardly to a level above said side walls, an improved gate mechanism for said dispensing opening comprising arm means including a lower arm member provided with a lower forward arm member pivot means on said bracket means and a rear lower arm member pivot means, an upper arm member including a forward upper arm member pivot means on said bracket means and a rear upper arm member pivot means, said upper arm member being shorter in length between its pivot means than the length of said lower arm member between its pivot means, a gate including an upper gate portion pivoted on said last mentioned lower and upper arm member pivot means, respectively, and a lower gate portion normally disposed in sealed engagement with said bottom wall at said dispensing opening, and power means pivoting said arm means to open and close said dispensing opening, said arm members and pivot means forming a linkage for moving said gate rearwardly and upwardly so as to free said gate from the loaded material, both of said arm members being normally positioned at a level above said side walls when said gate is in a closed position.

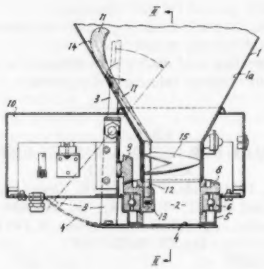


3,845,886

DEVICE FOR METERING FLOWABLE SOLIDS FROM A CONTAINER

Theodor Kokeisl, Zurlindenstrasse 21, 5000 Aarau, Switzerland

Filed Nov. 17, 1972, Ser. No. 307,569
Int. Cl. G01f *11/20*
U.S. Cl. 222—241 **2 Claims**



1. A device for metering flowable materials, comprising:

a container having a frustoconical downwardly converging bottom portion;

a body rotatable in said bottom portion and formed with an upwardly and outwardly extending generally straight elongated scraper lying along the inner surface of said bottom portion and formed with an edge effective to scrape material therefrom, said scraper having an upper end curved rearwardly in a direction opposite to the direction of rotation of said body; and

means for rotating said body to orbit said scraper along said surface in said direction, said upper end applying force to material within said bottom portion in opposition to the

gravitational pressure of the material to loosen same, said scraper having the configuration of a spatula with a sharpened leading edge in the direction of rotation and bearing elastically against said surface, said edge of said scraper being inclined to said surface at a substantially constant angle over substantially its entire length, said scraper having the configuration of a piece cut from a conical casing and extending substantially to the bottom of said frustoconical portion.

3,845,887

PRESSURIZED AEROSOL DISPENSER VALVE AND GASKET

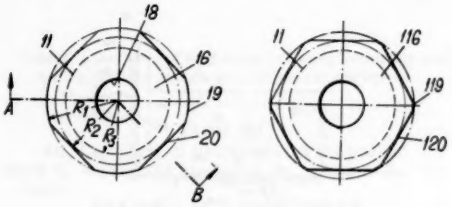
Herbert Meuresch, Falkenstein, Taunus, and Franz Zimmerhackel, Hattersheim, Main, both of Germany, assignors to Precision Valve Corporation, Yonkers, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,604

Claims priority, application Germany, Dec. 17, 1971, 2162762

Int. Cl. B05b *1/10*

U.S. Cl. 222—402.16 **6 Claims**



1. A pressurized dispenser carrying a valve capable of normal use as a discharge valve and of additional use as a propellant charging valve, said valve comprising a valve housing having an upper rim, a valve body within said valve housing and having a valve stem, and an apertured sealing gasket which surrounds the valve stem which gasket is clamped and forms a seal between the upper rim of the valve housing and an adjacent part of the dispenser in which the valve is mounted, said gasket having a non-circular periphery which everywhere extends radially beyond the upper rim of the valve housing to provide one or more marginal zones having reduced sealing engagement with said adjacent part of the dispenser such that when charging the dispenser with propellant each of said marginal zones is deformed and removed from its sealing relation with the said adjacent part of the dispenser to provide a propellant inlet passage leading to the dispenser externally of the valve housing.

3,845,888

SNAP-IN VALVE

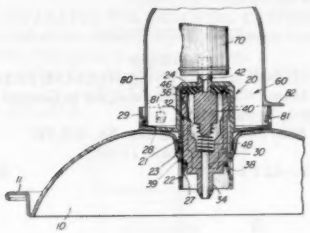
John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed May 7, 1971, Ser. No. 141,207

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.24 **4 Claims**

1. The combination of a metal end closure for a pressurized dispenser container, a valve unit and a plastic retainer for mounting the valve unit, the end closure including a central aperture defined by an axially inwardly projecting flange, the retainer including a cylindrical skirt portion for receiving a valve unit, the retainer including a resilient radial flange abutting the exterior surface of the end closure, the cylindrical skirt portion extending through the end closure aperture and including an annular shoulder against which the edge of the end closure flange bears to lock the retainer in place in the aperture, the end closure including a conical inward depression circumscribing the aperture whereby the radial flange of the retainer is deflected into conforming abuttment with said conical depression, the cylindrical skirt portion of the retainer also including a plurality of tabs integral with a lower portion



of the skirt and extending inwardly, the free ends of the tabs bearing axially against the valve unit.

3,845,889

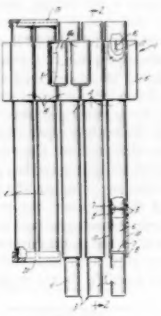
SHOTGUN SHELL HOLDER

Raymond M. Hurd, 2548 S. 78th St., Milwaukee, Wis. 53219

Filed May 1, 1972, Ser. No. 249,273

Int. Cl. F42b *39/00*

U.S. Cl. 224—16 **4 Claims**



1. A shotgun shell holder for releasably supporting a plurality of shotgun shells having tubular bodies with end closures defining shell lips projecting radially outwardly of the bodies, comprising

a plurality of substantially rigid tubes connected to each other, each tube being of a length equal to a substantial multiple of the shell length and having an inner diameter essentially corresponding to the diameter of the end closure to accommodate a plurality of said shells in coaxial stacked relation with each other and said tube, each tube including a lower end portion having an inner tube lip projecting inwardly to restrict the bottom opening in accordance with the diameter of the tubular body which supports the shell depending from the tube with the shell lip engaging the tube lip, said lower end portion of the member being resiliently flexible and permitting manual removal of the exposed shell from the lower end with the next succeeding shell dropping downwardly into the exposed retained position, and

mounting means including a base support plate having means for attachment to the waist of the operator and a plurality of side-by-side tubular supports which are substantially shorter than said tubes, said tubes being releasably mounted in each of said supports for releasably

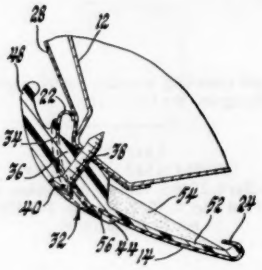
attaching said tubes to the body of a shooter with the lower end of the tubular member located below the waist line for convenient grasping of the exposed shell by the hand of the operator.

3,845,890

GARMENT HOOK AND GARNISH MOLDING RETAINER

Harold W. Johns, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1973, Ser. No. 418,399
Int. Cl. B60r *11/00*
U.S. Cl. 224—42.1 C **3 Claims**



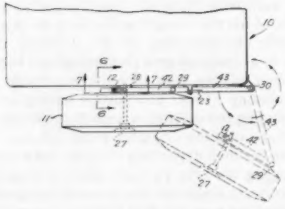
1. In combination with a vehicle body having a garnish molding with an opening therein, a garment hook comprising: a body portion adapted to be received in the opening in the garnish molding and having a central aperture for receiving means to fasten the body portion to the vehicle body, a hook portion integral with the body portion and extending generally upwardly in spaced relation from the vehicle body to be engageable by a garment, an elongated leg portion integral with the body portion extending substantially perpendicular to the longitudinal axis of the fastener means when the fastener means is inserted through said aperture and depending downwardly therefrom within the garnish molding, and means on the leg portion cooperating with means on the garnish molding to retain the garnish molding on the vehicle body.

3,845,891

SIDE AND REAR MOUNT TIRE CARRIER

Steven J. Becher, P.O. Box 783, Dolores, Colo. 81323

Filed Sept. 22, 1972, Ser. No. 291,253
Int. Cl. B62d *43/02*
U.S. Cl. 224—42.21 **6 Claims**



1. A carrier for selectively mounting an article on either of two adjacent intersecting body surfaces of a vehicle, comprising:

a. an arm having a first section and a second section pivotally connected with respect to each other;

b. means for pivotally mounting the end of said first section, remote from said second section, for rotation about a vertical axis at the intersection of said surfaces;

c. means for securing said article to said second section;

d. first latching means for securing said carrier to the first of said adjacent surfaces; and

e. second latching means for securing said carrier to the second of said adjacent surfaces after said carrier has been pivoted about said intersection;

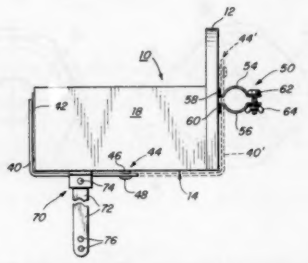
f. whereby said carrier is secured to the second surface in a folded position and to the first surface in an extended position.

3,845,892

BICYCLE SAFETY SEAT FOR CHILD

William F. Bernhardt, Jr., 7 Strang Rd., Tewksbury, Mass. 01876

Filed May 15, 1972, Ser. No. 253,062
Int. Cl. B62j *7/06*
U.S. Cl. 224—36 **4 Claims**



1. A child safety seat for mounting on a bicycle comprising a raised back portion, a seat portion connected to said raised back portion, two side arm portions connected to both said back and seat portions, a monolithic leg stock front piece having separate leg apertures and being releasably engagable with said seat portion and arm portions, means for slidably engaging said leg stock front piece with said arm and seat portions, means for securing said leg stock front piece in position relative to said arm and seat portions including a strap fixed to said leg stock front piece and extending beneath said seat portion and being releasably attachable to at least one of said seat and back portions; a pair of clamps fastened to said back portion in spaced relation to each other for securing said seat to the handlebars of the bicycle, a pair of spaced pivot supports mounted on the bottom of said seat portion and a pair of struts pivotally attached to said pivot supports at one end and adapted at the other end for engagement with the front axle of the bicycle, said leg stock front piece being movable upon release of said strap to permit a child to be installed in or removed from said seat.

3,845,893

METHODS FOR CUTTING AND RAISING SUBMERGED MASSES

Mark P. Banjavich, New Orleans, La., assignor to Taylor Diving & Salvage Co., Inc., Bell Chasse, Plaquemines Parish, La.

Filed Apr. 10, 1973, Ser. No. 349,748
Int. Cl. B26f *3/00*
U.S. Cl. 225—1 **8 Claims**

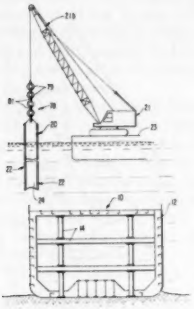
1. A method for cutting a mass which is submerged within a body of water, said method comprising the steps of:

positioning a chopping tool over said submerged mass;

releasing the chopping tool for downward movement toward said mass;

impacting said chopping tool against said mass to penetrate and cut said mass;

raising said tool by means of a hoisting mechanism connected to said tool; and



repeating said steps of positioning, releasing, impacting, and raising until the mass is in a desired cut condition.

3,845,894

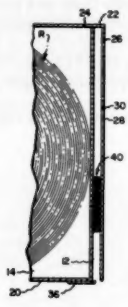
FILM RETAINING DISPENSER ATTACHMENT

David G. Merlin, 333 MacArthur Dr., Williamsville, N.Y. 14221

Filed Mar. 7, 1973, Ser. No. 338,855

Int. Cl. B26f *3/02*

U.S. Cl. 225—25 **16 Claims**



1. A container for dispensing film and including a trailing wall, a leading wall joined to said trailing wall, cutting means arranged along the outer juncture of said leading and trailing walls, a tear strip, and means removably securing said tear strip to the outer side of said leading wall prior to feeding the lead of the film over said outer side of said leading wall and beyond said trailing wall for severing such lead by said cutting means, wherein the improvement comprises: separable laminated film retaining attachment means arranged between said tear strip and said leading wall, and including an inner substrate secured to the outer side of said leading wall and having a pressure sensitive adhesive outer surface, and an outer substrate secured to the inner side of said tear strip and having an adhesive resistant inner surface contacting and forming an interface with said adhesive outer surface, whereby upon removal of said tear strip said inner and outer substrates separate along said interface to expose said pressure sensitive adhesive outer surface for releasably retaining the remaining portion of the severed lead for subsequent feeding and severing operations.

3,845,895

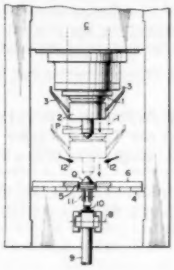
APPARATUS FOR CRACKING CASTINGS

Yositaka Nakahara, Nagoya, Japan, assignor to Nagoya Metal Co., Ltd., Nakagawa-Ku, Nagoya, Japan

Filed Feb. 28, 1974, Ser. No. 447,021

Int. Cl. B26f *3/00*

U.S. Cl. 225—93.5 **1 Claim**



1. An apparatus for cracking castings characterized in that; a piece to be cracked, placed on a crackingtool receiving member fixedly mounted on a bedplate is given a pressure progressively by a cracking tool, said cracking tool being located above said piece and adapted to be vertically moved by means of hydraulic pressure so as to lodge its point in said piece by the co-operation of said cracking-tool receiving member; and, when an abrupt temperature rise occurs in a press-and-slide portion on a lodged face in said piece on which portion the cracking tool is slidingly pressed, cooling water is injected on to said press-and-slide portion, with the continuing downward motion of said cracking tool for exerting pressure thereon, whereby physical and chemical actions are concurrently caused, thereby instantaneously producing a cracking force of several times as high as a power possessed by said cracking tool itself.

3,845,896

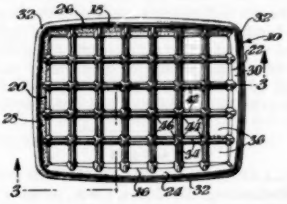
OPEN BOTTOM TRAY WITH MULTIPLE PEDESTAL DISPLAY PLATFORM

Kenneth L. Crabtree, Fairfield, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed Jan. 31, 1973, Ser. No. 328,426

Int. Cl. B65d *1/34, 25/54, 65/16*

U.S. Cl. 229—2.5 **9 Claims**



1. An open top tray for packaging products, such as moist pieces of meat, fish or poultry in conjunction with a transparent wrapping enclosing both the tray and the product packaged thereon, molded to final shape from generally opaque material which in the empty condition is capable of being

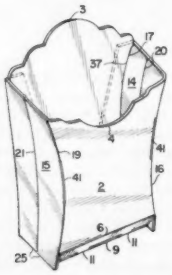
nestably stacked with other like trays for shipment and storage, the tray comprising at least two opposed beam portions defining the overall shape of the tray, the bottom of the tray being formed by a plurality of downwardly opening channel shaped ribs spaced from each other to provide a plurality of open viewing windows and integrally joined to the beam portions to maintain them in properly spaced relationship, a plurality of hollow pedestals projecting upwardly from the ribs, the pedestals tapering to narrow crown portions which are substantially thicker than the average thickness of the generally opaque material from which the remainder of the tray is molded, the upper surfaces of the crown portions being slightly rounded and of sufficient area that they define a display platform for supporting the product packaged thereon without puncturing the surface of the product.

3,845,897

SNAP-ERECTED CONTAINER

Kenneth T. Buttery, and Thomas Vander Lugt, Jr., both of Kalamazoo, Mich., assignors to Brown Company, Kalamazoo, Mich.

Filed Nov. 28, 1972, Ser. No. 310,124
Int. Cl. B65d *5/00, 5/36*
U.S. Cl. 229—16 R **11 Claims**



1. A carton comprising a front wall panel, a rear wall panel, and a pair of end wall panels hingedly connected together at arcuate score lines defining complementary convex and concave side edges of adjacent panels, said end wall panels having bisecting folding score lines provided therein permitting said carton to be folded flat, an open top, and a bottom panel hingedly connected to the lower edges of said front and rear wall panels, but unconnected to the lower edges of said end wall panels, wherein the side edges of said end wall panels are arcuately convex and the side edges of said front and rear wall panels are arcuately concave, whereby said carton may be snapped from flat folded position into open position by squeezing the end wall panels thereof with the fingers of one hand and whereby said carton remains in said open position with said end wall panels curved arcuately concave outwardly, the bottom of said carton bulging downwardly and having a bottom plane not lower than the lower edges of said end wall panels so as to provide stability of said carton upon standing.

3,845,898

COLLAPSIBLE COMPARTMENTED BOX

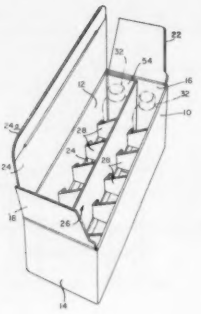
Robert A. Hackenberg, East Lyme, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 29, 1973, Ser. No. 327,652
Int. Cl. B65d *5/48*
U.S. Cl. 229—28 R **3 Claims**

1. A blank for forming a collapsible compartmented box comprising

A. an aligned series of four contiguous panels for forming the front, rear and side walls of the box,

B. two additional panels aligned with the series of panels, the width of one additional panel being approximately one-half the width of the panels forming the side walls of the box, the other additional panel being substantially as long as the panels forming the front and rear walls of the box, and



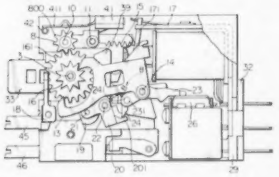
C. a pair of identical divider panels hinged to corresponding long edges of the second additional panel and one of the panels for forming the front and rear walls of the box, each divider panel having a plurality of diagonal cuts centered on its longitudinal axis.

3,845,899

ELECTROMAGNETIC COUNTER

Tatsuhiko Irie; Kazuhiko Hara, and Akihiro Kuroyanagi, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 10, 1973, Ser. No. 405,164
Claims priority, application Japan, Oct. 14, 1972, 47-102978
Int. Cl. G06m *1/30*
U.S. Cl. 235—92 C **13 Claims**



1. An electromagnetic counter comrising in combination

a. a counting means including

a plurality of digit wheels corresponding in number to desired number of units of a figure to be counted and being supported rotatably on a common shaft,

said digit wheels having respectively a heart cam at a side surface, and

a plurality of pinions supported on a common shaft and respectively associated with said digit wheels for raising the unit of counting figure;

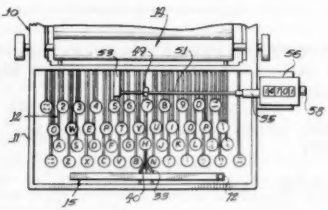
b. a drive means for driving said counting means including an electromagnetic device performing attraction of an associated armature in response to an input for counting, and

means for rotating one of the digit wheels at the lowest unit position in response to the attracted motion of said armature;

c. a reset means for resetting the digit wheels including a resetting button slidably mounted,
means responsive to a sliding of said resetting button for engaging said heart cam of the respective digit wheels to reset the digit wheels to their original positions, and means cooperative with said engaging means for releasing said association of the pinions with the digit wheels and controlling the released position of the pinions to be constant and their rotation to be restricted;
d. a frame member for integrally supporting and assembling said respective means therein;
e. a housing for accommodating said frame member; and
f. a key means for enabling said reset means to be operable;
said resetting button comprising at least two split members, one of said split members being a reset actuating member and the other being a guide member;
said frame member including a detachable stopper means for locking said guide member; and
said housing having a clearance provided around said resetting button for allowing the key means to be inserted, so that said actuating will be operated directly by the key means inserted without through the guide member, thereby the reset means is enabled to operate.

3,845,900
AUTOMATIC WORD COUNTING APPARATUS FOR A TYPEWRITER

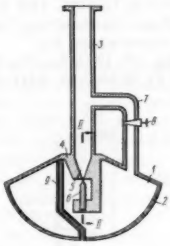
Sergio A. Anchia, 3283 N.W. 16st, Miami, Fla. 33125
Filed Oct. 29, 1973, Ser. No. 410,528
Int. Cl. B41j *9/24*
U.S. Cl. 235—102 **4 Claims**



1. An automatic word counting apparatus for counting the words typed on a standard typewriting machine having conventional letter, number, and punctuation keys and a normal spacer bar, the apparatus comprising a bracket mounted to the typewriter frame in a position beneath the spacer bar and projecting inwardly of the typewriter frame therefrom, a rocker arm having a point pivotally connected to the bracket for rocking movement about the pivot point and dividing the rocker arm into a first end section disposed beneath the spacer bar and spaced downwardly therefrom, and a second rocker arm section disposed on the opposite side of the pivot point and projecting away from the first rocker arm section, pivotable linkage means having one end operatively connected to the end of the second section of the rocker arm, a rod extending substantially normal to the axis of the rocker arm, support means mounted to the typewriter frame adapted to rotatably support the rod for rotation about the axis of the rod, the opposite end of the linkage means fixedly connected to the rod to effect the rotation thereof about its axis upon operation of the rocker arm, a one-stage ratchet operated counting mechanism having a drive shaft extending outwardly therefrom and operatively connected to the rod for rotative driving thereby upon actuation of the rocker arm, the counter mechanism including a reset knob projecting from the housing of the counter mechanism and adapted for resetting the counter to zero at the desires of the individual operating the typewriting machine, and means selectably interconnecting the end of the rocker arm disposed beneath the spacer bar to the spacer bar, and an actuating mechanism adapted to selectively engage and disengage the rocker arm from movement with the spacer bar to effect the engagement and disengagement of the counter mechanism from counting the number of words being typed on the typewriting machine, and a switch device operatively associated with the actuating mechanism and movable between an on and off position whereby in the on position the actuating device interconnects the rocker arm to the spacer bar for movement therewith to count the words being typed, and when the switch device is in the off position the actuating device disengages the spacer bar from the rocker arm thus de-activating the counter mechanism.

3,845,901
DEVICE FOR SPRAYING LIQUID PRODUCTS AND MELTS

Petr Stepanovich Voloshin, prospekt Lenina, 47, kv. 2, Dzerzhinsk; Mark Efremovich Ivanov, Stremyanny pereulok, 16/18, Moscow; Boris Alexeevich Klopovsky, ulitsa I. Susanina, 6, korpus 4, kv. 39, Moscow; Viktor Mikhailovich Lindin, ulitsa Polbina, 62, korpus 1, kv. 107, Moscow; Boris Georgievich Novitsky, Dubinskaya ulitsa, 45, kv. 30, Moscow; Viktor Markovich Olevsky, Leningradsky prospekt, 75 a, kv. 91, Moscow, and Viktor Mironovich Fridman, Karetny ryad, 5/10, kv. 180, Moscow, all of U.S.S.R.
Filed July 24, 1973, Ser. No. 382,181
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **8 Claims**



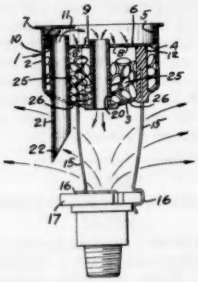
1. A device for spraying a liquid product, comprising a chamber, a perforated bottom for said chamber, a branch pipe for introducing pressurized product to be sprayed into said chamber, a nozzle on said branch pipe and adapted to supply the liquid product into said chamber, an elastic member mounted in said chamber opposite the nozzle to undergo oscillatory motion under the effect of the flow of liquid product from said nozzle, said elastic member imparting acoustic oscillation to the liquid product, said elastic member comprising a cylindrical sleeve including a wall with longitudinal grooves therein, said nozzle comprising an annular member embracing said cylindrical sleeve with a jet opening therein facing said sleeve so that liquid flow from said jet opening is directed substantially perpendicularly towards said wall of said cylindrical sleeve.

3,845,902
SPRINKLER FEEDER FOR LAWN FOOD

William B. Delamater, 9114 Valley View, Whittier, Calif. 90603
Filed Feb. 11, 1972, Ser. No. 215,979
Int. Cl. A01c *15/00*
U.S. Cl. 239—314 **5 Claims**

1. A sprinkler feeder for agricultural fertilizing chemicals for use with sprinkler heads and nozzles for spraying water

over a given area: comprising, a body for holding fertilizing chemicals, a lid for said body for maintaining the fertilizing chemicals within the body, means for supporting the body above a sprinkler head, means for directing a portion of the



spray from said sprinkler head to said lid for passage through the lid into the body to dissolve the fertilizer, and means extending between the lid and the body for directing fertilizer received within the lid into the path of spray from said sprinkler head.

3,845,903

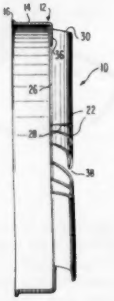
ONE PIECE RADIAL VANE DIFFUSER AND METHOD OF MANUFACTURING THE SAME

Frederick L. Runninger, Harrisonburg, Va., assignor to Dunham-Bush, Inc., Harrisonburg, Va.

Filed Aug. 15, 1973, Ser. No. 388,669

Int. Cl. B05b *7/06;* **B21k** *3/04*

U.S. Cl. 239—406 **10 Claims**



1. A one piece radial vane diffuser comprising: a circular metal sheet including an annular rim, a plurality of circumferentially spaced radial vanes partially struck from said sheet and being joined to said rim at their radially outermost ends by hinges integral with said rim, said vanes being of a width so as to overlap at their side edges, and said vanes being similarly twisted at said hinges, about a radial axis extending through said hinges to form air passages therebetween.

3,845,904

VARIABLE FLOW TWO STAGE NOZZLE

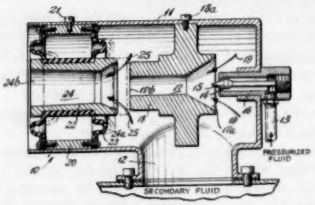
Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Filed Dec. 7, 1973, Ser. No. 422,880

Int. Cl. B05b *7/12*

U.S. Cl. 239—410 **17 Claims**

1. A variable flow two stage nozzle comprising a first nozzle means having a first passageway formed with an exit, means connectible to a source of pressurized fluid for directing a flow of pressurized fluid into the first passageway and means for communicating the passageway with a source of secondary fluid whereby flow of pressurized fluid in the first passageway induces flow of secondary fluid therein to have both fluids be ejected from the exit; a second nozzle means having a second passageway formed with an exit, means for directing the flow from the first nozzle means into the second passageway and means for communicating the second passageway to another



source of secondary fluid whereby the flow of the fluid from the first passageway into the second passageway induces the flow of secondary fluid in the second passageway to have the fluids discharged from the second passageway exit and means responsive to a selected value of pressure differential existing between adjacent the exit of the second passageway and the another source of secondary fluid for closing the communicating means between the second passageway and the another source of secondary fluid.

3,845,905

METHOD AND DEVICE FOR PREPARING GRAVEL

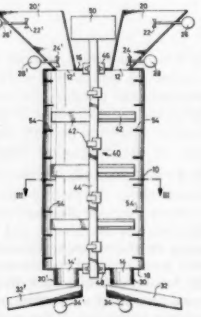
Josef Haslberger, Landshuter Strasse 30, D 805 Freising, Germany

Filed Mar. 5, 1973, Ser. No. 337,959

Claims priority, application Germany, Mar. 14, 1972, 2212251

Int. Cl. B02c *17/16*

U.S. Cl. 241—26 **12 Claims**



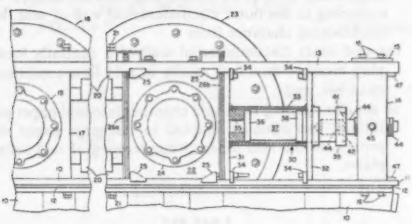
1. In a method for preparing raw gravel for screening or washing of extraneous material therefrom the improvement comprising mechanically comminuting said extraneous lump material by crushing the lump material with stones of the gravel prior to screening or washing, said comminuting step comprising stirring said raw gravel with a stirrer in a vertical container, moving the material from the top to the bottom of the container, and holding said raw gravel in the range of action of said stirrer in said container for a selected time.

3,845,906

MECHANICAL ACCUMULATORS FOR ROLL CRUSHERS

Floyd A. Lillig, and Edward O. Spangler, both of Cedar Rapids, Iowa, assignors to Iowa Manufacturing Company, Cedar Rapids, Iowa

Filed Apr. 21, 1972, Ser. No. 245,958
Int. Cl. B02c *4/32*; B03c *23/04*
U.S. Cl. 241—32 8 Claims



1. In a roll type crusher having a frame and a pair of spaced crushing rolls journaled at each of their axial ends for rotation on the frame adapted to crush material therebetween by rotation of the rolls with respect to each other, at least one of the rolls being movable with respect to the other in order to adjust the spacing therebetween, the improvement in combination therewith of a pair of mechanical accumulators for substantially maintaining a predetermined spacing between the rolls during their crushing operation up to a predetermined load, the accumulators accomodating an overload by increasing the predetermined spacing until the overload has terminated and thereafter restoring the predetermined spacing, each of the accumulators comprising: a housing having opposite ends and a peripheral wall extending lengthwise of the housing; a block of material in the housing having opposite ends and a peripheral wall extending lengthwise of the block and the housing; the block ends being associated with respective ones of the housing ends, and the peripheral wall of the block being in spaced relation to the periphal wall of the housing; the housing and block being disposed between a portion of the frame and one of the movable journals and operatively associated with both so that thrust between the rolls is communicated to the block ends and resisted by the body of the block lengthwise thereof, the block being constituted of a material effective to substantially maintain the predetermined roll spacing up to the predetermined load and upon a first overload to compress lengthwise and expand peripherally towards the housing wall in order to increase the predetermined roll spacing but upon termination of the first overload to expand lengthwise and contract peripherally effective to restore the predetermined roll spacing; and adjusting means operative between one of the block ends and one of the movable journals and frame portion to permit adjustment of the predetermined roll spacing independently of operation of the accumulator.

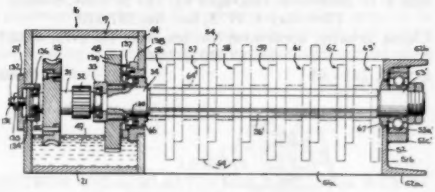
3,845,907

APPARATUS FOR COMMINUTING TRASH

Werner Schwarz, Bochumer Strasse 20, Seeheim A.D.B., Germany

Continuation-in-part of Ser. No. 180,687, Sept. 15, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,590
Claims priority, application Germany, Oct. 22, 1970, 2051756; Apr. 10, 1971, 2117519
Int. Cl. B02 *18/06*
U.S. Cl. 241—36 22 Claims

1. Apparatus for comminuting trash comprising:
a. a motor;
b. at least two parallel shafts driven at least indirectly by said motor;
c. a plurality of disc-shaped blades disposed on each of said shafts and secured thereto for rotation therewith, each of said blades having at least one tongue extending into the direction of rotation and at least some of the blades on each of said shafts being spaced from adjacent blades on the same shaft, with the blades on one shaft extending into the spaces between blades on the opposite shaft;



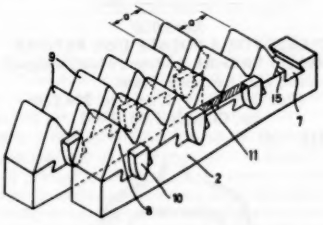
d. means for rotatably supporting one of said shafts so as to have at least a predetermined degree of axial play parallel to said shaft associated therewith;
e. means for rotatably supporting the other of said shafts so as to have substantially no axial play associated therewith relative to the one shaft, and
f. the blades on one shaft extending into said spaces on the other shaft with a clearance equal to said predetermined degree of axial play.

3,845,908

CONVEYOR MACHINE FOR SUSPENSIONS AND VISCOUS MATERIALS HAVING A CAGE-LIKE HOUSING

Heinrich Friedenreich, Limburgerhof; Bernhard Suck, Luwigshafen, and Juergen Reitsch, Bochum, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Oct. 16, 1972, Ser. No. 297,633
Claims priority, application Germany, Oct. 22, 1971, 2152704; Apr. 15, 1972, 7214292
Int. Cl. B02c *13/10*
U.S. Cl. 241—46.11 5 Claims



1. In a comminuting conveyor machine for suspensions, viscous materials and free-flowing solids having an internal conveying rotor and a peripheral cage-like housing stator comprising a plurality of axially extending bar and annular elements fitted together, the improvement of a plurality of tooth-shaped abrasion-resistant members replaceably retained by tongue and groove engagement on the inner surface of each of said plurality of axially extending bar to form a corresponding plurality of profiled toothed racks pointing inwardly from the periphery of the stator toward the axis of rotation, to form a shear and impact zone between themselves and the conveying rotor, each of said tooth-shaped members having an integral, abrasion-resistant projection on its side surface

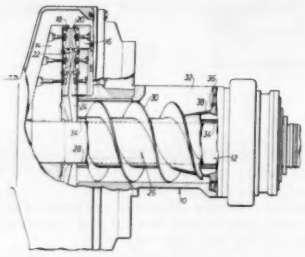
which bears against the side of an adjacent tooth-shaped member on the next adjacent bar, the projections along each profiled toothed rack thereby providing axially spaced annular openings between adjacent bars for the passage of the material being treated.

3,845,909

GRINDING APPARATUS FOR VEGETABLE MATERIALS

Inge J. G. Johansson, Falkvagen 61, 183 50 Taby, Sweden

Filed May 3, 1973, Ser. No. 357,010
Claims priority, application Sweden, May 10, 1972, 6254/72
Int. Cl. B02c *7/06*
U.S. Cl. 241—65 **3 Claims**



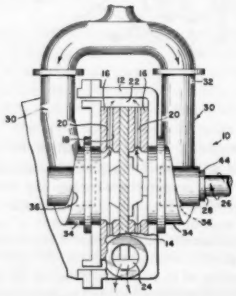
1. In a grinding apparatus, for vegetable materials, of the type comprising two grinding discs mounted rotatably in relation to one another within a stationary frame, at least one of said grinding discs being carried by a rotatable shaft surrounded concentrically and freely by a screw conveyor for feeding material to be ground from an inlet opening in the frame to the grinding surfaces of the discs, and driven at a lesser number of revolutions per minute than said shaft; the improvement which comprises a stuffing box disposed between the shaft and the conveyor laterally of the inlet opening, said stuffing box being supplied with water under pressure through channels formed in the conveyor which channels in turn communicate with a stationary feeding channel from an external pressure water source over a second stuffing box located between said frame and said conveyor screw.

3,845,910

INLETS FOR A DOUBLE DISC REFINER

William Richard Cledaniel, Andover, Mass., assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Filed Oct. 10, 1972, Ser. No. 296,130
Int. Cl. B02c *7/06, 23/02*
U.S. Cl. 241—245 **7 Claims**



1. In a double disc paper stock refiner having refining plates with an inner circumference mounted on the discs, the improvement wherein the stock supply means includes two flow-conditioning stock inlet means, each said stock inlet means being arranged to discharge stock in the same rotational direction and comprising:

an inlet conduit tangentially arranged with respect to a flow-conditioning chamber, said chamber having an inner, and an outer, circumferential wall;

a helically-shaped wall forming the back wall of said chamber and forming means to impart circular and axial velocity to the stock coming into said chamber through said tangentially arranged conduit, said helically-shaped wall extending to the outer circumferential wall of said flow-conditioning chamber from

the said inner circumferential wall of a centrally located plug member mounted axially in said flow-conditioning chamber, and

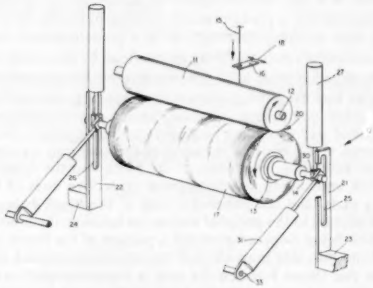
an annular opening from said chamber into said paper stock refiner, said opening adapted to discharge paper stock proximate the said inner circumference of said refining plates.

3,845,911

WINDER

William Kirk Wyatt, Lansdale, Pa., assignor to Turbo Machine Company, Lansdale, Pa.

Filed Oct. 31, 1972, Ser. No. 302,555
Int. Cl. B65h *54/20, 54/52*
U.S. Cl. 242—18 DD **20 Claims**



1. A winder for wind-up of continuous strand material or the like into a package comprising, a drive roll for rotationally driving against the surface of a package of ever-increasing diameter that is disposed as an idler roll, an idler roll adapted for receiving strand material or the like fed thereto in wound relation thereabout for package formation thereon, means for continuously guiding strand material to the idler roll, said idler roll being mounted for rotation about an axis, path means providing a predetermined path of continuous displacement of the axis of the idler roll as the package thereon increases in diameter, said path being of other than horizontal disposition, and variable force exerting means in engaged relation with the idler roll for applying forces to the idler roll in the direction of said path that vary continuously as long as the diameter of the package on the idler roll increases, wherein said force exerting means comprises first constant force application means operative for applying substantially constant force to the idler roll in the direction of the path of displacement of the axis of the idler roll, and a second constant force application means operative for applying a substantially constant force to the idler roll in an angular direction relative to the path of displacement of the axis of the idler roll that continuously approaches an angular direction more greatly transverse to the path of displacement of the axis of the idler roll as the size of the package increases from its initial to its final diameter.

3,845,912

PROCESS AND DEVICES FOR THE WINDING OF CONTINUOUS FIBERS-PARTICULARLY GLASS FIBERS—IN THE FORM OF BOBBINS

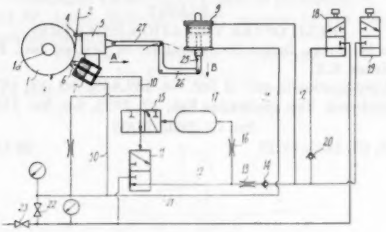
Winfried Paul Eichmanns, Rheydt; Hans-Joachim Finken, Nizzaallee, and Guenther Winand Mager, Stolberg, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 27, 1973, Ser. No. 355,267

Claims priority, application France, Apr. 28, 1972, 72.15343

Int. Cl. B65h *54/02, 54/28*

U.S. Cl. 242—18 R 10 Claims



1. Apparatus for winding continuous fibers, especially glass fibers, on a rotating sleeve, comprising a thread guide having a support and means providing for traverse motion of the guide in a direction parallel to the axis of the sleeve, the guide support being mounted for motion in a direction toward and away from the surface of the winding being applied to the sleeve, and mechanism for effecting such motion of the support and thus of the thread guide toward and away from the surface of the winding including a fluid pressure operable device, a fluid pressure gauge mounted to move with the support and having means for directing a fluid jet against the surface of the winding of the sleeve and means for sensing jet fluid reflected from the surface of the winding, and fluid pressure means responsive to reflected jet fluid as sensed by said gauge for delivering actuating fluid to said device to effect motion of the fiber guide support.

3,845,913

METHOD AND APPARATUS FOR WINDING WIRE

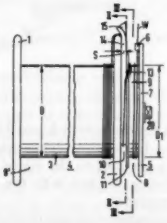
Werner Hagen, Penzendorf, Germany, assignor to Maschinenfabrik Niehoff-Kommanditgesellschaft, Schwabachfurtherstr, Germany

Filed Nov. 10, 1972, Ser. No. 305,493

Claims priority, application Germany, Dec. 31, 1971, 2165798

Int. Cl. B65h *54/00*

U.S. Cl. 242—25 R 11 Claims



1. Apparatus for transferring wire or the like from one spool to another comprising a main spool and an auxiliary spool coaxially arranged therewith about a central spindle said main spool having a core and a flange at each end, loop forming and storage means mounted about said spindle between said main and auxiliary spools, said loop forming and storage means comprising a first member having an arcuate peripheral edge over which said wire is adapted to move and a second member having an extending portion for guiding said wire over the adjacent flange, said peripheral edge having a radius smaller than the core of said main spool, and said extending portion protruding radially beyond said flange, and means for feeding a predetermined length of wire to said auxiliary spool to be wound thereabout, said wire being subsequently fed to said loop forming and storage device and thereafter wound about said main spool.

3,845,914

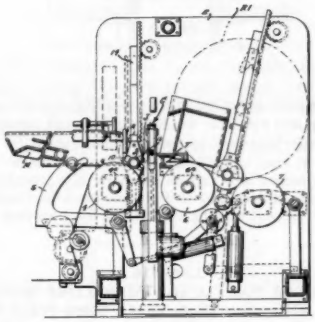
METHOD AND APPARATUS FOR CUTTING A WEB OF MATERIAL IN A WEB WINDING MACHINE AND AIR LAPPING A CUT END OF THE MATERIAL ABOUT A WINDING CORE IN THE MACHINE

John E. Straujups, Lexington, Mass., assignor to Birch Brothers, Inc., Somerville, Mass.

Filed Sept. 18, 1973, Ser. No. 398,411

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 R 5 Claims



1. A web winding machine for winding a web of material onto a roll and cutting a stretched span of the web when the roll attains a desired size, said winding machine comprising a frame having jaws and a vertically adjustable core supported in the jaws, a rear driving roll for supporting and winding a partially formed roll of the material wound around the core, a forward driving roll located in the frame in substantially horizontally spaced relation to the rear driving roll for receiving a partially wound roll while supporting a stretched span of the web extending between itself and the rear driving roll, means for transferring the partially wound roll onto the forward driving roll at a predetermined point, core feeding apparatus for moving a replacement core onto the said jaws after the partially finished roll has been moved onto the forward driving roll, a vertically reciprocating web cutter mechanism mounted in the frame at points between the rear driving roll and the forward driving roll, said cutter mechanism being movable into contact with the underside of the said stretched span of material when the partially formed roll reaches a desired size, said web cutting mechanism including an elongated gate structure having spaced apart sides and cutter means mounted between the sides, means for vertically moving the gate and engaging the cutter means with the said span to sever the web and provide a trailing end and a free cut end of material, and air lapping means located in the gate structure below the cutter means and movable therewith for supplying

travelling jets of compressed air arranged to be laterally directed against the first driving roll and which are mounted for progressive movement upwardly beneath said stretched span as said cutter means moves into a cutting position, and said travelling jets of compressed air being guided in a path of travel for movement against said cut end as cutting occurs to turn the cut end over onto the said winding core into overlapping relationship.

3,845,915

WINDING MACHINE

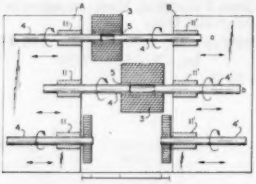
Willi Johann Schmidt, Hahn/Taunus, and Hugo Lumb, Heidesheim, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Continuation-in-part of Ser. No. 166,941, July 28, 1971, abandoned. This application July 5, 1973, Ser. No. 376,716

Claims priority, application Germany, July 29, 1970, 2037624

Int. Cl. B65h *19/00*

U.S. Cl. 242—68.4 **9 Claims**



1. An apparatus for performing winding operations comprising opposed rotatable winding shaft means supported at one end only by supporting means, and means for axially displacing at least one of said winding shaft means in said supporting means into various positions in a predetermined winding area, said winding shaft means when displaced being adapted to support winding core means for a winding roll.

3,845,916

CARTRIDGE FOR ELONGATED RECORD MEDIUM

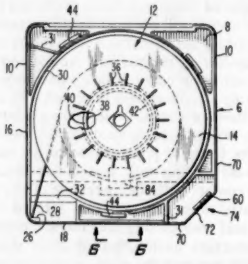
Daniel K. Livingston, Maple Shade; Bjorn Fritjof Floden, Palmyra; Harry Gilbert Wright, Haddonfield, and Wei Hwa Tsien, Cherry Hill, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,387

Claims priority, application Great Britain, Mar. 23, 1973, 14240/73

Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*

U.S. Cl. 242—197 **12 Claims**



1. A cartridge for enclosing a flanged reel for an elongated record web, comprising: first and second members each having an end wall portion substantially parallel to a flange of said reel and further side wall portions aligned to define with said end wall portions a hollow enclosure for said reel, a plurality of latching means for demountably securing said first and second members together to form said enclosure, an elongated aperture formed in a first of said side walls to provide access for moving said web, a further aperture in a side wall adjacent said first side wall to provide entry and exit of said web, one of said end wall portions including a third aperture for providing driving access to said reel, first keying means in one of said end walls for proper disposition of said reel in said cartridge, and further keying means establishing proper disposition of said cartridge in a cartridge holding means.

3,845,917

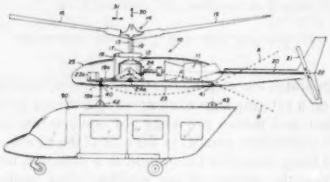
HELICOPTER VIBRATION ISOLATION

Jan M. Drees, Dallas, Tex., assignor to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 189,945, Oct. 18, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,614

Int. Cl. B64c *27/00*

U.S. Cl. 244—17.27 **26 Claims**



1. A helicopter having a load supporting structure which comprises:

a. a lift module including a pylon, main rotor, and controls therefor in which main rotor induced vibration at a predominant frequency becomes more intense as forward speed increases, and

b. a load carrying structure directly supported from said lift module only at nodal points on said lift module for the isolation of said vibration from said load carrying structure.

3,845,918

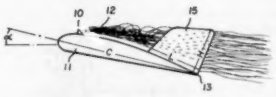
VORTEX DISSIPATOR

Richard P. White, Jr., Pittsford, N.Y., assignor to Rochester Applied Science Associates, Inc., Rochester, N.Y.

Filed Dec. 7, 1972, Ser. No. 313,099

Int. Cl. B64c *5/06*

U.S. Cl. 244—41 **10 Claims**



1. A dissipator for the vortex formed by a three-dimensional lifting surface, said dissipator comprising:

a. a fixed plate secured to the tip of said lifting surface;

b. said plate being aligned with the free stream flow over said lifting surface;

c. said plate extending forward from the trailing edge of said tip;

d. the length of said plate at said tip in said free stream direction being about 0.3 to 0.6 times the chord of said tip in said free stream direction;

e. said plate extending outward from the suction side of said lifting surface far enough to reach the maximum rotational velocity region of the vortex formed along said tip in any practical angle of attack of said lifting surface; and

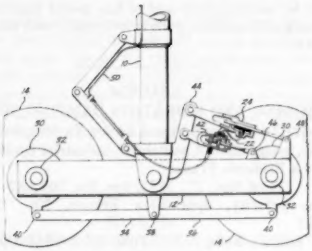
f. said plate being arranged relative to the geometry of said lifting surface so that the resultant of the velocity of said free stream flow and the rotational velocity of said vortex produces a stall angle of attack relative to said plate to produce turbulence downstream of said plate sufficient to dissipate a substantial portion of the strength of said vortex.

3,845,919

LANDING GEAR TRUCK PITCH DAMPING

Robert W. Jenny, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 7, 1974, Ser. No. 431,189
Int. Cl. B64c *25/36*
U.S. Cl. 244—103 R **14 Claims**



1. A frictional damping device for use with a bogie or truck-type aircraft landing gear having a vertically extending strut, a horizontally extending axle beam pivoted about the lower end of said strut, and wheels rotatably mounted on axles located on said axle beam; comprising in combination:

sensing means for sensing relative angular motion between said vertical strut and horizontal axle beam; and

frictional damping means responsive to said sensing means to damp the relative angular motion by use of frictional force.

3,845,920

INFLATABLE EVACUATION RAMP

Robert S. Satterfield, Pleasant Hill, and Joseph Chacko, Corte Madera, both of Calif., assignors to Sargent Industries, Inc., Los Angeles, Calif.

Filed Jan. 14, 1972, Ser. No. 217,783
Int. Cl. B64d *25/14*
U.S. Cl. 244—137 P **30 Claims**

1. An inflatable device for use in evacuating aircraft passengers departing from an exit over the wing of the aircraft comprising

an elongated structure forming a base member and defined by

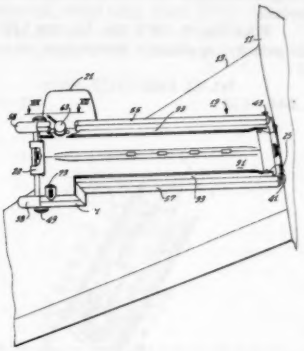
a first pair of elongated tubular members,

a second pair of relatively short tubular members extending between said first pair of tubular members near the ends thereof and in fluid communication therewith,

means near a first end of said base member adjacent the wing of the aircraft for receiving inflation injecting fluid for introduction into said base member, and

handrail means extending along and supported by said first pair of tubular members and in fluid communication with said base member only near the end thereof distal from the location for injection of air by said inflation means and

control means disposed in the path of fluid communication between said handrail means and said base member for providing for the inflation of said handrail means only



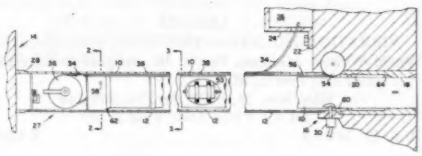
after an inflation of said base member to extend the first pair of elongated tubular members to their elongated position.

3,845,921

TELESCOPING BOOM

Thomas R. Thompson, Palos Verdes Peninsula, and Leslie A. Hromas, Rolling Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 10, 1973, Ser. No. 405,228
Int. Cl. B64g *1/10*
U.S. Cl. 244—158 **6 Claims**



1. A telescoping boom comprising:

a. boom support means;

b. a guide member secured to said boom support means;

c. a boom carried in said guide member in telescoping relation therewith;

d. releasable locking means for securing said boom in a nonextended position and for release thereof for movement to an extended position;

e. means for extending said boom out of said guide member and said support means;

f. locking means for securing said boom in the extended position; and;

g. an instrument package carried in said boom support means having electric cables connected thereto and to said instruments, cable tension mechanism carried in said boom guide to prevent entanglement of said cables responsive to boom deployment, and, means for guiding said electric cable from said instrument package to said cable tension mechanism including adjacent longitudinally extending lands provided in said boom and said guide member.

3,845,922

SABOT PROJECTILE

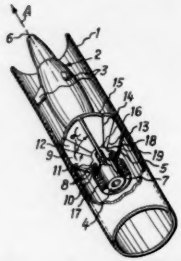
Cornelius Mayer, Fallanden, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed May 7, 1973, Ser. No. 358,141

Claims priority, application Switzerland, May 10, 1972, 6924/72

Int. Cl. F42b *13/32, 13/16*

U.S. Cl. 244—3.28 **7 Claims**



1. A sabot projectile comprising a propellant charge provided for the sabot projectile for producing a gas pressure, support means, vanes pivotably secured to said support means, said vanes in a first position forming a substantially pyramid-shaped sabot and after pivoting about an axis into a second position forming a substantially resistance-free guide mechanism, the pyramid-shaped sabot having a tip which, viewed in the direction of flight of the sabot, is directed towards the rear, said vanes having lateral boundary surfaces which in the first position of said vanes tightly bear against one another under the action of the gas pressure of the propellant charge, said vanes being constructed as a T-guide mechanism and the pivot axes of the vanes being directed perpendicular to the axis of the projectile.

3,845,923

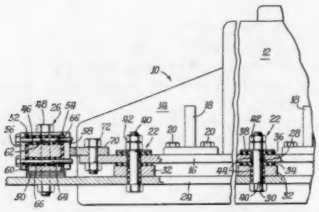
VIBRATION-ISOLATING MOUNTING FOR ENGINES

David William Atkinson, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 24, 1972, Ser. No. 309,240

Int. Cl. F16m *5/00;* **F16f** *15/00*

U.S. Cl. 248—3 **5 Claims**



1. A vibration-isolating mounting assembly for a marine engine and drive gear, said assembly comprising in combination:

an engine operatively connected in a drive arrangement to transmit and receive torque forces about its axis and thrust forces along said axis;

a pair of support rails extending parallel to the axis of said engine, one on each side thereof secured directly to said engine, said rails having forward and rearward ends corresponding in proximity to the forward and rearward ends of said engine;

a stationary support member extending beneath each of said support rails;

means including resilient pads, a plurality of aligned holes, each lined with a resilient sleeve in each of said rail and support members, and a bolt extending through each of said aligned holes, securing each of said rails to said support members to support said engine; and

thrust restraining means including resilient means secured between each said rail and said support member at the rearward end of said rail substantially in the plane of and substantially in alignment therewith and operative to restrain said rail against horizontal forces acting on said engine, said thrust restraining means comprising a reaction block secured to and extending upward from said support member, a pair of face plates having plane surfaces disposed on opposite sides of said reaction block and at right angles to the axis of said engine, a resilient sound absorbing pad disposed between each of said face plates and said reaction block, a flange securing one of said face plates to said rail, and

means for securing said pair of face plates together and for forcing said resilient pads into contact with said reaction block.

3,845,924

CUSHIONING AND VIBRATION DAMPING SUPPORTS

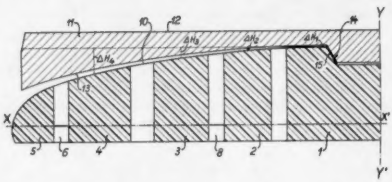
Jean Andre Taviere, and Pascal Xavier Taviere, both of Paris, France, assignors to Caoutchouc Industriel De Rochassieux S.A., La Bridoire, France

Filed Nov. 27, 1972, Ser. No. 309,682

Claims priority, application France, Nov. 30, 1971, 71.42963

Int. Cl. B60g *11/18;* **F04h** *9/02;* **F16f** *3/00*

U.S. Cl. 248—22 **16 Claims**



1. A cushioning and vibration damping support, including a plurality of independent elements comprising an elastic material, said elements being disposed about a common central axis and each having a planar base portion defining a common base plane perpendicular to said central axis and a load-supporting surface, the load-supporting surfaces of said elements approximately defining a paraboloid coaxial with said central axis wherein the distance of said load supporting surfaces from said common base plane decreases as the radial distance from said central axis increases.

3,845,925

LIGHTER SOCKET AND SCREW THREADS MOUNTING

Jones Burnett Edwards, 1216-A Euclid Ave., Charlotte, N.C. 28203

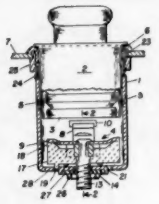
Division of Ser. No. 51,454, July 1, 1970, Pat. No. 3,697,025. This application Apr. 27, 1972, Ser. No. 248,209

Int. Cl. G12b *9/02;* **F23q** *7/22*

U.S. Cl. 248—27 **1 Claim**

1. An electric cigarette lighter socket usable with a thermostatic latch, and adapted to be mounted on a panel said socket comprising a tubular member having an open top end and a closed bottom end, springy fingers lanced substantially in the upper portion of the sidewall of said tubular member, an

integral flange at said top end of said tubular member for bearing against the face of a panel on which said socket is mounted, short axially elongated narrow outward indentations at intervals in the sidewall of said tubular member, beginning near said top end of said tubular member and extending rearward of said flange, cut screw threads on the outside of said indentations, narrow threaded collar means encircling said tubular member and engageable with said cut screws threads on said indentations for clamping said socket to the panel,



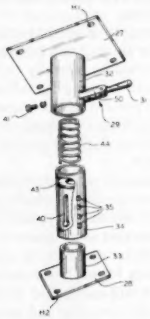
including radially elongated axially shallow openings substantially in the lower half of the sidewall of said tubular member opposite the upper tips of the thermostatic latch, the upper edges of said openings being substantially above said upper tips, said openings dimensionally proportioned to provide only positive clearance between the sidewall of said tubular member and the upper tips of the thermostatic latch under all conditions when in use, so as to minimize the area of each said opening.

3,845,926

SEAT PEDESTAL WITH VERTICAL AND SWIVEL ADJUSTMENTS

Robert A. Wahls, Evanston, Ill., assignor to Freedman Seating Company, Evanston, Ill.

Filed Apr. 2, 1973, Ser. No. 347,214
Int. Cl. F16m *11/30*
U.S. Cl. 248—162 **11 Claims**



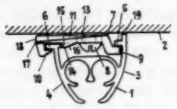
1. A pedestal comprising a double telescoping vertical tube including at least a rotary-free tube, a unitary double acting locking means secured to an outer one of said telescoping tubes, means in an intermediate one of said tubes for receiving said locking means to fix the telescoping length and therefore the vertical height of said pedestal, and means associated with said locking means acting in one way for selectively releasing or restraining the rotation of said tubes with respect to each other so that they may or may not rotate with respect to each other depending upon the operated condition of said locking means and associated with said locking means acting in another way for releasing said tubes so that they may telescope.

3,845,927

FASTENING DEVICE FOR USE ON A WALL OR CEILING SURFACE

Konrad Bratschi, Muri near Bern, Switzerland, assignor to Firm K. Bratschi, Silent Gliss, Muri, Switzerland

Filed June 15, 1973, Ser. No. 370,536
Claims priority, application Switzerland, June 16, 1972, 9090/72
Int. Cl. F16m *13/00*
U.S. Cl. 248—223 **6 Claims**



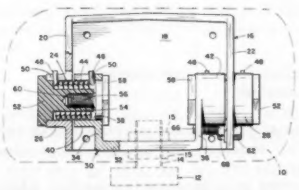
1. A fastening device for fixing a body on a wall or ceiling surface, comprising at least one fastening member mountable on said holding surface, said member having two spaced engaging means which are interconnected and transversely project in the same direction, and at least one pawl extending from the one engaging mean transversely thereto towards the other engaging mean in substantially opposite direction to said direction of the projection of said engaging means, said pawl being resiliently movable transversely to its extending direction and having a nose projecting in the direction of the spring tension, and on the body to be fixed by means of said member two spaced elongated flanges transversely projecting in the extending direction of said pawl, whereby in fixed position of said body said flanges being engaged by said engaging means and said body being locked by said nose of said pawl.

3,845,928

SPRING LOADED TRANSDUCER BRACKET

Burton M. Barrett, and James A. De Voe, both of Tulsa, Okla., assignors to Lowrance Electronics, Inc., Tulsa, Okla.

Filed July 30, 1973, Ser. No. 383,593
Int. Cl. F16m *13/00*
U.S. Cl. 248—291 **4 Claims**



1. An apparatus for pivotally supporting a transducer or other device to a boat transom, comprising:

a mounting bracket including a base portion for attachment to a boat transom, the mounting bracket having integral left and right wing portions extending from opposite sides thereof, the wing portions being parallel to and spaced from each other and each having an aligned opening therein spaced from the base portion and including an integral tubular collar around each opening;

a pivot bracket including a base portion to which a transducer or the like may be attached, the base portion hav-

ing integral left and right wing portions extending from opposite sides thereof, the wing portions being parallel to and spaced from each other and each having an aligned opening therein spaced from the base portion and including an integral tubular collar around each opening, the internal diameter of the pivot bracket collars being substantially equal to the internal diameter of the mounting bracket tubular collars, the pivot bracket being positioned within said mounting bracket with the tubular collars in alignment; and

a pair of coiled springs, one positioned within the left tubular collars of the pivot and mounting brackets and the other positioned in the right tubular collars of the pivot and mounting brackets, the external diameter of the coiled springs being slightly less than the internal diameter of the collars whereby the springs serve as axles for the rotation of said pivot bracket relative to the mounting bracket, one end of each spring being affixed to the mounting bracket and the other end being affixed to the pivot bracket, said spring providing resilient biasing force tending to pivot the pivotal bracket relative to the mounting bracket towards a rest position.

3,845,929

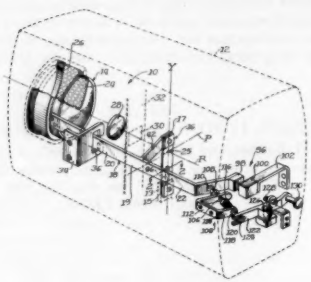
STABILIZING MECHANISM

James Reekie, Arcadia, Calif., and Marvin F. Royston, Skokie, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 831,974, June 10, 1969, abandoned. This application Nov. 4, 1971, Ser. No. 195,879

Int. Cl. G02b *23/02*

U.S. Cl. 248—358 R **11 Claims**



1. A stabilized mass system comprising:

a frame member;

a mass;

elastic means mounting said mass to said frame member for vibration about an axis at an inherent vibratory frequency;

said mounted mass having a rest position relative to said frame member and said elastic means applying a return torque to said mounted mass to return said mounted mass to said rest position when said mounted mass is displaced from said rest position, said return torque being substantially zero when said mounted mass is at said rest position and increasing in magnitude as said mounted mass is displaced from said rest position; and

means for applying a torque to said mounted mass in opposition to said return torque, said opposing torque being substantially zero when said mounted mass is at said rest position and increasing in magnitude as said mounted mass moves away from said rest position during said vibratory motion about said rest position, thereby reducing said inherent vibratory frequency of said mounted mass.

3,845,930

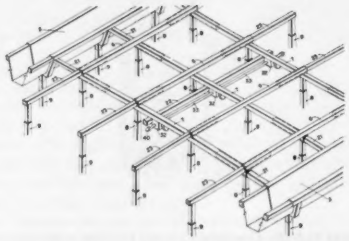
TELESCOPIC SUPPORTS FOR ADJUSTABLE ROOF AND BEAM FORM

Charles E. Metrailer, 3613 Government St., Baton Rouge, La. 70806

Division of Ser. No. 203,273, Nov. 30, 1971, Pat. No. 3,744,945. This application Nov. 7, 1972, Ser. No. 304,549

Int. Cl. E04g *11/40*

U.S. Cl. 249—29 **6 Claims**



1. A concrete form for detachably mounting upon a transporting carriage comprising

a frame assembly wherein is included

a plurality of vertically oriented telescoping posts, and braces suitable for maintaining the vertical alignment of said posts,

jacks located on the lower extremities of said vertical posts, which terminate on a common plane, said jacks permitting minor adjustment of the height of the vertical posts, means located on the lower extremity of said frame assembly for attachment to a means of transport,

a concrete pour form, provided with a central span which ranges in shape from flat to highly contoured, mounted atop said telescoping posts,

locking means whereby the telescoping posts can be raised, lowered and locked to support the concrete form at a desired elevation,

beam forms, trough-like in shape and opening upwardly, mounted on the sides of said central span of said concrete pour form, carried by laterally oppositely disposed horizontally oriented telescoping tubular members mounted within the top portion of the frame assembly,

a plurality of gear boxes mounted on the upper part of said frame assembly operatively geared one to another and to a rotatable shaft,

gear means associated with said horizontally oriented telescoping tubular members which gear said members to said gear boxes and to said rotatable shaft such that rotation of said rotatable shaft in one direction will cause said telescoping tubular members to telescope outwardly and extend the beam forms, and rotation of said shaft in the other direction will cause said telescoping tubular members to telescope inwardly and retract the beam forms.

3,845,931

VALVE

Daniel R. Pimentel, Seekonk, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

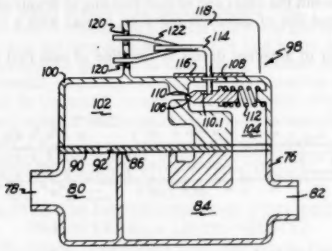
Filed June 11, 1973, Ser. No. 368,923

Int. Cl. F03g *7/06*; **F16k** *31/40*

U.S. Cl. 251—11 **4 Claims**

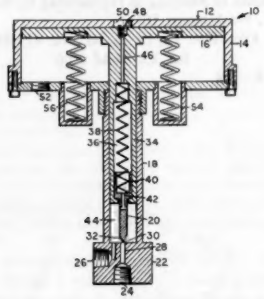
1. A valve device comprising body means having an inlet passage and an outlet passage, having valve seat means between said passages, and having an aperture communicating with at least one of said passages, valve member means mounted on said body for movement between an open valve position spaced from said valve seat means and a closed valve position engaging said valve seat means, said valve member

means having a first portion extending outside said body means through said aperture, flexible diaphragm means secured in sealing relation to said first portion of said valve member means and to said body means around said aperture, spring means biasing said valve member means to said closed valve position with selected force, actuator means of a selected metal alloy secured outside said body means between said first portion of said valve member means and said body means to be deformed from an original configuration to a second configuration as said valve member means is moved to



said closed valve position with said selected force while said metal alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original configuration and to display a relatively higher modulus of elasticity to move said valve member means to said open valve position against said selected force when said metal alloy is heated above said transition temperature, and means selectively directing electrical current through said actuator means for selectively self-heating said actuator alloy above said transition temperature.

3,845,932
VALVE-BRAKE
John G. Fontaine, Fort Lauderdale, Fla., assignor to Fail Safe Brake Corporation, Ft. Lauderdale, Fla.
Filed Mar. 30, 1973, Ser. No. 346,686
Int. Cl. F16k *31/143*
U.S. Cl. 251—63.4 **4 Claims**



1. In a valve comprising, a housing for containing fluid, a valve seat in the housing, a valve stem in the housing movable to engage and disengage from the valve seat, a chamber in said housing, a piston in said chamber for operating the valve stem by a change of fluid pressure acting on the piston, and a connector connecting the piston to the valve stem in a manner allowing relative movement between the connector and the valve stem, the improvement wherein:

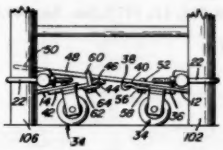
said connector and said piston have a hollow space therein capable of containing hydraulic fluid and a passage extending through said connector and said piston communicating between said space and said chamber,

plug means removably closing said passage at said piston for permitting escape of air to said chamber upon filling of said hollow space with hydraulic fluid and for sealing said passage thereafter,

a vent opening between a portion of said chamber and the atmosphere providing access to said plug means,

and an inlet leading to another portion of said chamber for applying a change of fluid pressure to said piston.

3,845,933
CHAIR LIFT
Marshall B. Heizer, Jr., Rt. 1, Box 12, Rawlings, Va. 23876
Filed Mar. 2, 1973, Ser. No. 337,305
Int. Cl. B60p *1/48*
U.S. Cl. 254—8 R **17 Claims**



1. A lift device for raising the legs of a chair off the floor comprising:

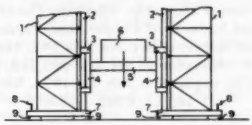
a. roller means for supporting said chair when the legs are raised off the floor;

b. support means for supporting said roller means from opposite pairs of adjacent legs for limited vertical shifting of said roller means between upper and lower positions relative to said legs, said support means comprising first and second mounting means from which said roller means depend;

c. attaching means for pivotably attaching said mounting means to the legs of the chair, said attaching means including a housing on said mounting means and clamping means having one end journaled in said housing and the other end engaging the legs of the chair; and

d. said support means including an operator adapted for movement between first and second positions and operatively connected to said roller means for shifting the latter between their upper and lower positions in response to movement of said operator between its first and second positions.

3,845,934
CLIMBING POLE FOR CLIMBING JACKS
Bengt Valfrid Andersson, Vasteras, Sweden, assignor to Paul Anderson Industrier AB, Vasteras, Sweden
Filed May 26, 1972, Ser. No. 257,350
Claims priority, application Sweden, May 28, 1971, 6936/71
Int. Cl. B66f *1/00*
U.S. Cl. 254—105 **5 Claims**



1. A hoisting device comprising climbing poles vertically mounted on a base surface and held in position by staying masts, climbing jacks mounted on said climbing poles, said

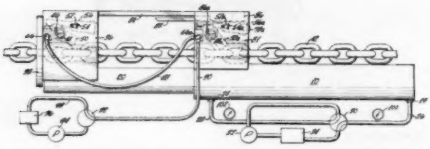
climbing jacks having means for climbing upwards along said climbing poles, said climbing jacks having means for supporting a load thereon, said climbing pole having a continuous profile along its entire length, two free opposite continuous surfaces cooperating with the climbing jacks, vertically spaced guiding projections extending from one side of the pole from between said free faces towards the staying mast, guiding portions on said projections having a larger extension longitudinally than transversely of the pole for nonrotatably guiding the pole relative to said mast, said mast including a guiding member, and means cooperating with said guiding member on the mast said projections for guiding parallel displacement of the pole relative to the mast along a longitudinal axis of the mast.

3,845,935

CHAIN JACK WITH MECHANICALLY AND HYDRAULICALLY OPERATED PAWLS

Henry B. Chambers, Santa Inez, Calif., assignor to Hydranautics, Goleta, Calif.

Filed Apr. 11, 1973, Ser. No. 349,992
Int. Cl. B66f *1/00*
U.S. Cl. 254—110 **4 Claims**



1. A chain jack having a chain, a ram attached to a piston in a hydraulic cylinder for actuation therof, a pawl attached to the head of said ram, and a pawl attached to said hydraulic cylinder, said pawls engaging links of said chain successively and repetitively as the piston in said hydraulic cylinder extends and retracts said ram; in which the improvement comprises:

a. springs biasing said pawls toward links of said chain;

b. catches selectively locking said pawls out of engagement with links of said chain and releasing said pawls for engagement with links of said chain;

c. hydraulic cylinders for maintaining said catches released from said pawls during operation in a mode to move the chain and the ram actuating cylinder in one direction with respect to each other; and

d. a cam attached to said ram actuating hydraulic cylinder and a cam attached to said ram head to selectively engage each of said catches to cause selective engagement of and release of said pawls from the links of said chain during operation in a mode to move the chain and the ram actuating cylinder in the other direction with respect to each other.

3,845,936

MODULAR CRASH CUSHION

Kenneth J. Boedecker, Jr., Jupiter Island, Fla., and Charles I. Gibson, Lebanon Township, Allegheny County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 364,192, May 25, 1973, abandoned, Continuation of Ser. No. 203,805, Dec. 1, 1971, abandoned. This application July 16, 1973, Ser. No. 379,688
Int. Cl. E04h *17/00*
U.S. Cl. 256—1 **20 Claims**

1. For a rigid roadside obstacle located beside or on a highway and having a contact surface facing the vehicular traffic, a modular crash cushion having:

a. a first line of drums extending forward from one side of said contact surface;

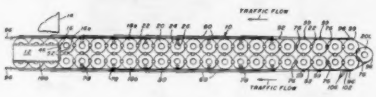
b. a second line of drums extending forward from the other side of said contact surface and adjacent said first line of drums;

c. spacer means for connecting together adjacent drums in said first line of drums and in said second line of drums in spaced relation;

d. said first line of drums and said second line of drums being connected at one end to said rigid roadside obstacle;

e. skid means between said first line of drums and said highway and said second line of drums and said highway to permit the other end of said first line of drums and said second line of drums to move on impact with a vehicle; and

f. a pair of adjacent drums in one line of said first line of



drums and said second line of drums each having a drum body and a drum head and a chime defined by the ends of said drum body and said drum head and said spacer means has:

1. a mounting member connected to one drum of said first drum and said second drum;

2. a channel slidable in said mounting member, projecting from said mounting member and connected at its projecting end to the other drum of said first drum and said second drum; and

3. fastener means for securing said channel to said mounting member;

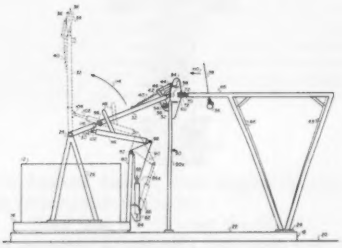
4. said channel having a track, a nut disposed in said track, biasing means engaging said nut to maintain said nut in said track, and said fastener means extending through said mounting member into said nut.

3,845,937

HELICOPTER CARGO LIFTING SYSTEM

Walker P. Johnson; Charles C. Cotton; David R. Bon, and Trules L. Peterson, all of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 14, 1973, Ser. No. 425,059
Int. Cl. B64d *1/00*
U.S. Cl. 258—1.8 **15 Claims**



1. Cargo handling apparatus for effecting coupling to, and uncoupling from, a hoist cable having a first coupling member on the end thereof, said apparatus comprising:

frame means for supporting said cargo;

a boom having one end pivotally connected to said frame means for movement about an axis disposed above the

center of gravity of said frame means and said cargo, said boom being movable about said axis between a lowered resting position and a raised, substantially vertical position;

a second coupling member mounted on the other end of said boom, said second coupling member being engageable by said first coupling member and cooperable therewith to effect a lifting connection between said cable and said boom;

spring means, connected between said boom and said frame, for urging said boom from said vertical position toward an intermediate position wherein gravity urges said boom toward said resting position; and

check means, connected between said boom and said frame means, for retarding movement of said boom from said intermediate position to said resting position under the influence of gravity, wereby said first coupling member may be lowered from engagement with said second coupling member before said boom moves to its resting position.

3,845,938

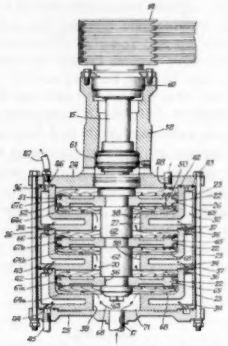
APPARATUS FOR DISPERSING FINELY DIVIDED SOLID PARTICLES IN A LIQUID VEHICLE

George R. Schold, 7909 2nd St. N., St. Petersburg, Fla. 33702

Filed Sept. 27, 1972, Ser. No. 292,801

Int. Cl. B01f *7/26*

U.S. Cl. 259—8 **9 Claims**



1. Apparatus for dispersing solid particles held in agglomerated form and carried in suspension by a liquid vehicle as a fluid mixture comprising:

a mixing vessel having a fluid inlet at one end thereof and a fluid outlet at the other end thereof, said inlet being adapted to be operatively connected to means for introducing a fluid mixture into said inlet under pressure and moving said fluid mixture through said mixing vessel to said outlet;

said vessel comprising a plurality of annular dish-shaped elements having a substantially U-shaped cross section and stacked one upon the other, and closure means associated with said dish-shaped elements enclosing said vessel at both ends, each of said dish-shaped elements comprising a laterally extending base portion and an axially extending wall portion connected to said base portion;

releasable means holding said dish-shaped elements and said closure means in assembled relationship;

said dish-shaped elements in their assembled relationship defining circumferentially extending chamber means therebetween;

means defining internal fluid cavities in each of said dish-shaped elements for conducting temperature control fluid therethrough;

communicating passage means in said dish-shaped elements connecting the internal cavities of each of said dish-shaped elements with each other;

a rotatable shaft extending into said vessel through said dish-shaped elements and adapted to be driven from a power source; and

agitator disc means mounted on said shaft and projecting radially into said chamber means.

3,845,939

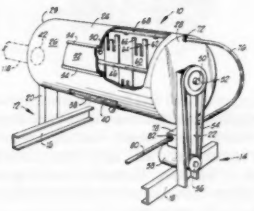
COMPOSTING APPARATUS

David B. Waldenville, Oklahoma City, Okla., assignor to Waste-Treat, Inc., Oklahoma City, Okla.

Filed Dec. 6, 1972, Ser. No. 312,573

Int. Cl. B01f *7/04*

U.S. Cl. 259—10 **6 Claims**



1. Composting apparatus comprising:

enclosure means of generally elongated shape and including side walls and end walls defining a generally cylindrical internal space, said enclosure means having at least one closeable access aperture;

agitation means consisting of a shaft and a plurality of plates secured to extend perpendicularly from said shaft, said shaft being journally supported by said enclosure means end walls axially through said cylindrical internal space;

wetting means including a water delivery pipe having a plurality of spray nozzles attached in communication therewith, said pipe being secured across the upper extremity of said cylindrical internal space;

a water supply connected to said wetting means;

rotary drive means connected to said agitation means shaft;

an a-c source;

a solenoid valve connected in said water supply to control flow therefrom;

electrical relay means connected to said a-c source and being energizable to provide output electrical energization to said solenoid valve means and said rotary drive means; and

temperature sensor means in communication with said enclosure means internal space and energizable upon sensing of less than a pre-determined temperature to cause energization of said electrical relay means.

3,845,940

MIXING TOOL FOR MACHINES FOR APPLYING GLUE TO SHAVINGS

Wilhelm Lodige, Elsener Strasse 9c; Fritz Lodige, Leuschner Strasse 12, and Josef Lucke, Im Lohfeld 13, all of 479 Paderborn, Germany

Filed Aug. 8, 1973, Ser. No. 386,781

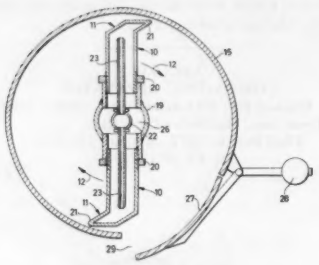
Claims priority, application Germany, Aug. 12, 1972, 2239852

Int. Cl. B01f *7/20*

U.S. Cl. 259—107 **10 Claims**

1. A mixing tool for a machine for applying glue or the like to particulate material such as wood shavings in a vertical

drum-shaped mixing container having a shaft rotatable on the axis thereof, said tool being fixed to the shaft and extending radially therefrom to near the peripheral wall of the container, said tool comprising; a head section on the radially outer end, a body having the radially inner end adapted for fixed connection to said shaft and the radially outer end being connected



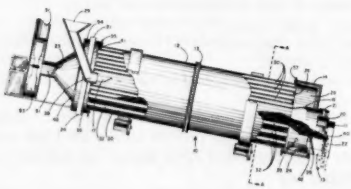
to said head, said head and body tapering inwardly toward one another adjacent the juncture thereof and forming surfaces on the tool which are inclined radially inwardly and radially outwardly respectively, said tool when viewed in the direction of the axis of rotation thereof presenting substantially the same maximum cross sectional dimension as when viewed at right angles to the said axis.

3,845,941

APPARATUS FOR PRODUCING ASPHALT-AGGREGATE COMPOSITIONS

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 286,613, Sept. 5, 1972. This application May 15, 1973, Ser. No. 360,464
Int. Cl. B28c *5/06*
U.S. Cl. 259—157 **8 Claims**



1. Apparatus for producing asphalt-aggregate compositions comprising:

an elongated rotatable cylindrical drum having a cavity therein and a wall at each end thereof;

a plurality of spaced hollow pipes extending along the interior of the cavity between the walls, the interior of the tubes communicating exteriorily of said walls;

means for introducing asphalt and aggregate through one of the walls at an input end of the drum and means for removing composition through the wall at the opposite end;

means for venting moisture from the drum cavity;

a heating chamber at the opposite drum end communicating with the pipe interiors and burner means for supplying heat within the chamber; and

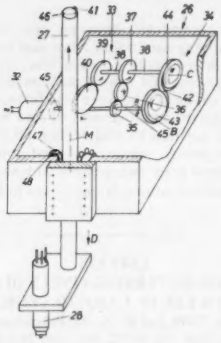
means for venting at least a portion of gaseous mixtures from within the drum cavity to the heating chamber.

3,845,942

TORCH CUTTING MACHINE

Georg Roeder, Frankfurt/Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt, Germany

Filed Oct. 17, 1972, Ser. No. 298,350
Int. Cl. B23k *7/10*
U.S. Cl. 266—23 K **9 Claims**



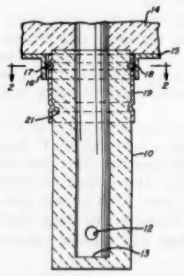
1. A torch cutting machine including at least one cutting torch, a vertically arranged bearing bar, said torch mounted to said bearing bar, a drive system operatively connected to said bearing bar for moving said bearing bar and said torch suspended therefrom up and down, said drive system including a drive shaft, said drive system further including transmission means between said bearing bar and said drive shaft whereby the weight of said bearing bar and said torch exerts a torque direction to said drive shaft, said transmission means including a gearing system associated with said bearing bar, a weight compensation device for counter balancing said torque, said weight compensation device including a work roller fixedly mounted on said drive shaft whereby said torque direction is also urged to said work roller, a storage roller mounted generally aligned with said work roller, a spring band wound under tension on said work roller counter to said torque direction, and the end of said spring band remote from said work roller being wound on said storage roller.

3,845,943

REFRACTORY POURING TUBE

James T. Shapland, Wilkins Township, Allegheny County, Pa.

Filed Oct. 26, 1973, Ser. No. 409,835
Int. Cl. F27d *3/14*
U.S. Cl. 266—38 **5 Claims**



1. In a combination which includes a holder, a pouring tube, and means attaching said tube to said holder,

said holder comprising a refractory block, a metal frame

around at least a portion of said block, and a skirt depending from said frame;

said tube being formed of refractory, the upper end portion of which is received in said skirt;

said attaching means comprising clip means extending through said skirt and engaging said tube;

the improvement comprising:

a metal band encircling the refractory of said tube and having opposed slots receiving said clip means; and

means fixing said band to said refractory.

3,845,944

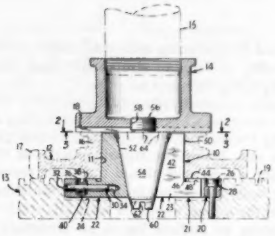
ADJUSTABLE EXPANDING DIE

Robert T. Miller, and Elias M. Murin, both of Hagerstown, Md., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed Nov. 6, 1972, Ser. No. 304,215

Int. Cl. B23b *31/40*; **B23q** *3/14*

U.S. Cl. 269—48.1 **9 Claims**



1. An adjustable expanding die for engaging a bore in an object held between a pair of opposed clamping members, one of the clamping members being adapted for movement toward and away from the other clamping member, comprising a unitary outer annular member, a variable diameter inner annular member including a plurality of radially movable arcuate segments, spring means for coupling each arcuate segment to the outer annular member and for biasing the arcuate segments radially inwardly, and a plug movable axially into the inner annular member to engage the arcuate segments, each arcuate segment having a bore engaging exterior surface and an interior surface adapted to cooperate with a surface of the plug such that moving the plug axially into the inner annular member into engagement with the arcuate segments effects an increase in an outer diameter of the inner annular member, the plug being adapted threadedly to engage one of the clamping members for selective and rotational adjustment of its axial position relative to that clampig member, thereby selectively to adjust the final outer diameter attained by the inner annular member when movement of the movable clamping member toward the other clamping member and corresponding movement of the plug into the inner annular member are halted by engagement of both clamping members with the object.

3,845,945

OBSTETRICAL EXAMINING CHAIR AND EXAMINATION METHOD

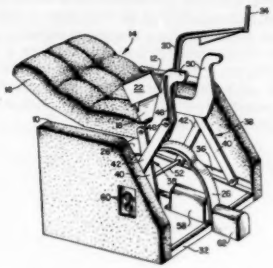
Wraymon Randle Lawley, 5601 Williamstown Rd., Dallas, Tex. 75230, and Tommy Joe Lawley, 1503 Wilshire Blvd., Arlington, Tex. 76012

Filed Nov. 6, 1972, Ser. No. 303,874

Int. Cl. A61g *13/00*

U.S. Cl. 269—323 **20 Claims**

1. A support structure for medical examination purposes in the form of a reclining chair, comprising: a base having stationary arm rest devices fixed on either side thereof; a reclining chair body support including integral back and buttocks support portions, leg support means for movement unitarily with said integral back and buttocks support portions to and from a reclining attitude and a seat rest portion disposed between said buttocks support portions when said chair body support is in an upright, chair-like position; means connecting said chair body support to said base enabling relative unitary reclining movement thereof, said leg support portions comprising a pair of laterally swingable, integral thigh and calf



support member adapted to be moved to properly expose a patient's perineum for medical examination thereof; and means for moving said reclining chair body support from said upright, chair-like position to a reclined, medical examination attitude, said seat rest portion being positioned other than between said buttocks support portions as said reclining chair body support is moved to said reclined, medical examination attitude to further expose a patient's perineum for medical examination.

3,845,946

MEDICAL DEVICE WITH HYDRAULICALLY MOVABLE PARTS

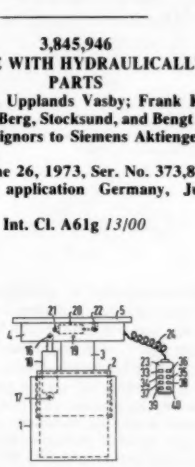
Hans Erik Warden, Upplands Vasby; Frank Kindvall, Danderyd; Carls Olof Berg, Stocksund, and Bengt Sedell, Nacka, all of Sweden, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed June 26, 1973, Ser. No. 373,814

Claims priority, application Germany, July 3, 1972, 2232553

Int. Cl. A61g *13/00*

U.S. Cl. 269—323 **9 Claims**



1. A medical device, comprising a plate for the patient, a casing, a frame pivotally connected with said casing and supporting said plate, at least one hydraulic member connected with said frame for swinging said frame, another hydraulic member connected with said casing for vertically moving at least a part of said casing, at least one third hydraulic member connected with said plate for longitudinally moving said plate, a plurality of instrumental valves, means operatively connecting one of said instrumental valves with the first-mentioned hydraulic member, means operatively connecting another one of said instrumental valves with the second-mentioned hydraulic member, means operatively connecting a third one of

said instrumental valves with the third-mentioned hydraulic member, a central steering device comprising a plurality of interconnected steering members, and separate pressure keys connected with separate steering members; a compressed air container connected with all steering members, means operatively connecting one of said steering members with the first-mentioned instrumental valve, means operatively connecting another one of said steering members with the second-mentioned instrumental valve, means operatively connecting a third one of said steering members with the third-mentioned instrumental valve, whereby said instrumental valves are actuated by gas from said compressed air container, a plurality of positioning valves connected to a steering member, a separate positioning valve being connected in parallel with a separate instrumental valve, and a plurality of lugs, a separate lug being connected with each positioning valve for operating that valve, said lugs switching off said positioning valves in a predetermined position of said plate.

3,845,947

SURGICAL OPERATION TABLES

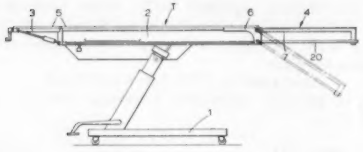
Norman John Lee, Three Colts Ln., Bethnal Green, London E.2, England

Filed May 31, 1973, Ser. No. 365,467

Claims priority, application Great Britain, June 7, 1972, 26535/72

Int. Cl. A61g *13/00*

U.S. Cl. 269—324 **3 Claims**



1. A surgical examination or operation table comprising a patient-supporting table top including a main section and an extension section, the extension section being slidable lengthwise of the table top between an extended position lengthwise of the table top and a retracted position below the main section, means for releasably locking the extension section in its extended position, the extension section including a carriage portion provided with slide members, complementary slide channels beneath the main section within which the slides are engaged, a swinging portion pivotally mounted on the carriage portion, clamping means for selectively maintaining the swinging portion in a horizontal position or an angular position with respect to the carriage portion, and means at each side of the table top comprising a locking plate pivotally mounted on the extension section and having a locking recess with a lead-in opening facing the direction of movement of the extension section, a co-operating locking pin mounted on the main section in position engageable in the locking recess when the extension section is fully extended, and a spring-loaded push-rod extending lengthwise of the table and being axially moveable against the loading of the spring, whereby to pivot the locking plate and release it from engagement with the locking pin for movement of the extension section selectively into the retracted position or any intermediate position.

3,845,948

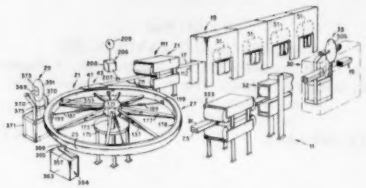
METHOD OF AND APPARATUS FOR PRODUCING STACKS OF FOLDED SHEET MATERIAL

Warren R. Furbeck, and Charles A. Lee, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,413

Int. Cl. B41l *1/30*

U.S. Cl. 270—40 **32 Claims**



1. A method of producing individual stacks of folded sheets from a plurality of webs of stretchable sheet material, said method comprising the steps of:

continuously, longitudinally folding each of a series of webs of sheet material while the webs travel along a feed path, traveling the folded webs about a closed path about a vertical axis, lifting the traveling webs as they make a revolution about said closed path and traveling the incoming webs therebeneath, and accumulating a multiple series of the folded webs in a vertically stacked condition constituting an endless log at an accumulating station, and severing the endless log at predetermined and spaced locations to form a plurality of individual stacks of folded sheets.

3,845,949

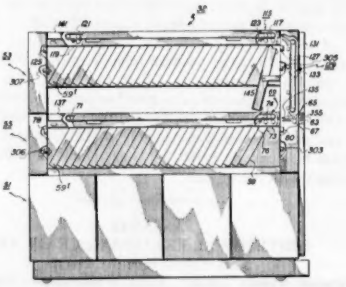
SORTER CONTROL TO PREVENT OVER-STACKING IN THE SORTER TRAYS

Thomas Acquaviva, Penfield, and William P. Kukucka, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1972, Ser. No. 312,251

Int. Cl. B65h *29/58*

U.S. Cl. 271—64 **2 Claims**



1. In a reproduction system the combination of:

a processor for making copies of a plurality of original documents in succession;

a sorter for sorting said copies into desired orientation, said sorter having a procession of copy receiving trays; and,

control means responsive to the individual copy capacity of said sorter trays to automatically switch to the next succeeding sorter tray when the number of copies produced

of one of said original documents exceeds the storage capacity of one or more individual sorter trays, said control means being adapted to control the operation of the sorter to automatically deliver copies of the succeeding document into the next succeeding empty sorter tray at the commencement of stacking of the copies of said succeeding document.

3,845,950

MATERIAL HANDLING APPARATUS

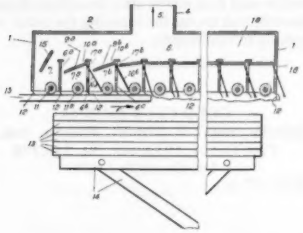
Bernard Kuzniak, Place J.B. Moulin, Lezoux (Puy-de-Dome), France

Continuation-in-part of Ser. No. 876,344, Nov. 13, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 174,612

Claims priority, application France, Nov. 22, 1968, 68.174897; Apr. 18, 1969, 69.6912139

Int. Cl. B65h *29/32*

U.S. Cl. 271—194 **23 Claims**



1. Material handling apparatus comprising, in combination: a suction enclosure including a first portion adjacent the material to be handled and a second portion;

means for dividing the first portion of the suction enclosure into a series of adjacent compartments, each of said compartments communicating with the second portion of the enclosure and having an opening facing said material; a plurality of obturators, one for each of the compartments, interposed between the compartments and the second portion of the suction enclosure, each of said obturators being movable between an open position and a substantially closed position in response to changes in the pressure differential between its compartment and said second enclosure portion;

means for applying suction to the second portion of the suction enclosure to hold said obturators in their substantially closed positions; and

means for locating said material and said suction enclosure in contact with each other such that the material blocks the opening of at least one of said compartments, the suction applying means thereupon reducing the pressure within the blocked compartment to enable movement of the corresponding obturator to its open position and thereby apply suction to said material.

3,845,951

FORAMINOUS SHEET REGISTRATION SYSTEM

Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 5, 1973, Ser. No. 367,280

Int. Cl. B65h *9/06*

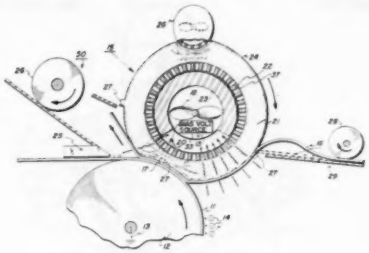
U.S. Cl. 271—243 **7 Claims**

1. A sheet registration system comprising:

a sheet feeding roller having a thick layer of compressible foraminous material and a generally smooth outer sheet feeding surface;

at least one sheet registration lip comprising a sheet edge detaining discontinuity in said outer surface of said roller; an opposing sheet feeding surface against which said foraminous material layer is compressed with moderate pressure to provide a sheet feeding nip therebetween; and drive means providing sheet feeding movement of said outer surface of said roller and said registration lip through said nip,

said registration lip being temporarily resiliently suppressed by compression into said foraminous material layer



smoothly and evenly with said outer surface of said roller in passing through said nip, and

said roller providing continuous even contact between said outer surface thereof, including said registration lip, and said opposing surface in said nip,

wherein said registration lip is monolithically formed from said same foraminous material.

3,845,952

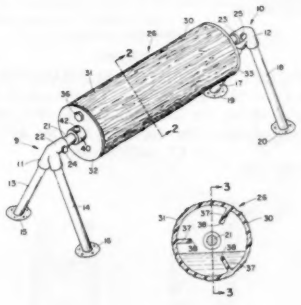
SIMULATED LOG-ROLLING DEVICE WITH INWARDLY EXTENDING BAFFLE MEMBERS

Daniel F. McKinney, 1653 20th Ave., Moline, Ill. 61265

Filed Feb. 21, 1973, Ser. No. 334,478

Int. Cl. A63b *23/06*

U.S. Cl. 272—1 E **8 Claims**



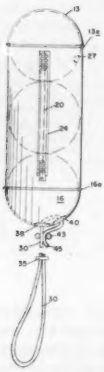
1. A simulated log-rolling device for use out of water comprising: a pair of spaced apart and ground-borne upright supports; an elongated horizontal liquid-carrying rigid tank structure supported on the supports and including a horizontal elongated rigid tank supported to rotate about a substantially horizontal axis and sealed at opposite ends; a detachable plug on the tank for passing liquid to and from the tank; and rigid baffles fixed to and extending lengthwise of the tank and extending radially inwardly with respect to the inner surface of the tank toward inner ends falling a substantial distance short of said axis of rotation so that water may freely flow around said inner ends as the tank rotates.

3,845,953

TENNIS SERVE TRAINING DEVICE

Farouk S. Malhas, 3520 West Pl. N.W., Washington, D.C. 20007

Filed Sept. 28, 1972, Ser. No. 292,907
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A 9 Claims



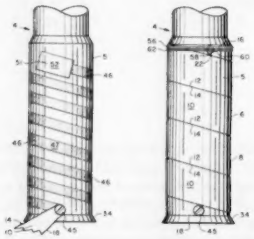
1. A tennis serve training device comprising an elongated closed end hollow container transversely dimensioned for holding only a single row of alined tennis balls to effect a predetermined weight, a single tether secured to an end of said container extending axially thereof for swinging said weighted container in an arc to simulate the movement of a tennis racquet in a serving movement wherein centrifugal force effects a longitudinal tension in said container; said container having a longitudinal side opening for inserting and removing tennis balls and a closure means for said opening extending longitudinally therealong to retain tennis balls in said container and being thus disposed to preclude tension due to centrifugal force from acting in a direction tending to open said closure means.

3,845,954

RACKET WITH DISPOSABLE HAND GRIP

George S. Case, 1815 Palmer Ave., Larchmont, N.Y. 10538

Continuation of Ser. No. 276,915, Aug. 1, 1972, abandoned.
This application Dec. 26, 1973, Ser. No. 427,533
Int. Cl. A63b *49/08*
U.S. Cl. 273—75 3 Claims



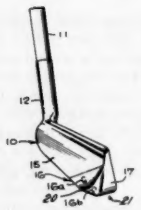
1. A sporting racket comprising a generally cylindrically shaped handle shaft and in combination with said racket a disposable hand grip assembly spirally wound on said handle shaft comprising a first strip of relatively bulky moisture-absorbent textile material, one longitudinal edge only of said first strip having attached thereto and running parallel to said edge a second strip of relatively thin non-bulky material having a width less than the width of said first strip and forming a leading edge of said first strip, reusable anchor means securing said first strip to the base of said handle shaft, said first strip being wound in a spiral upwardly about said handle from the base of said handle in a manner such that a portion of each succeeding spiral overlaps the preceding thin leading edge thereby forming a smooth gripping surface, and elastic lanyard means securing the upper end of said spiralled first strip from unwinding from said handle shaft, said lanyard being detachably secured at each end thereof to the upper end of said spiralled first strip, said hand grip assembly further comprising a tape strip having one side only thereof coated with a pressure-sensitive glutinous composition, said anchor means for anchoring said first strip at the base of said handle also securing one end of said tape to the base of said handle under said first strip, said tape being spirally wound about said handle upwardly from said base with the glutinous side of said tape outward and under said first spiralled strip, to thereby additionally secure said first textile strip to said shaft and prevent shifting thereof, and means for securing the other end of said tape adhesively to said handle.

3,845,955

GOLD CLUB INDICIA

Karsten Solheim, 10412 N. 37th St., Phoenix, Ariz. 85028

Filed Oct. 4, 1972, Ser. No. 294,775
Int. Cl. A63b *53/04*
U.S. Cl. 273—77 A 5 Claims



1. A set of at least two golf clubs, each golf club being comprised of a head having a toe and a heel, said heel being connected to a shaft, said head having a striking face between said toe and heel with a rounded lower corner at said toe, and a sole extending from said heel to said toe around said rounded corner at said toe, said striking face extending upwardly from said sole between said toe and heel at a unique and acute loft angle, and said head having a backside between said toe and heel extending upwardly from said sole, a portion of said backside having first and second surfaces sloping away from said striking face and toward each other to form a ridge about said rounded corner from a point near the bottom of said rounded corner and adjacent said sole to a point near the top of said rounded corner and adjacent said toe, said ridge extending further away from said striking face at the center of said rounded corner than any other portion of said backside, said first surface being of such sloping configuration and of such rearward extent, and with the club head being so configured, that said first surface may be seen by a person holding said club at the end thereof remote from said head and viewing said golf club head along a line substantially parallel to said shaft, said second surface being connected to said sole and being of such sloping configuration relative to the configurations of said first surface, said sole, and said club head that said second surface may be viewed by a person facing said club head from a direction generally opposite to the direction

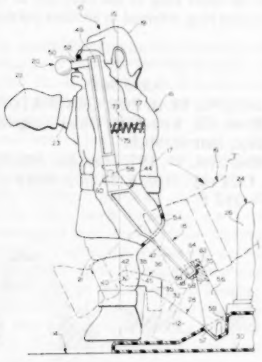
said shaft extends from said head, and indicia on at least said one of said first and second surfaces indicative of the magnitude of said unique loft angle.

3,845,956

KNOCK-DOWN BOXING FIGURE TOYS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Feb. 21, 1973, Ser. No. 334,435
Int. Cl. A63f *9/14*; A63h *13/06*
U.S. Cl. 273—85 F **13 Claims**



1. Toy apparatus for playing a competitive boxing game, said apparatus comprising a pair of individual and separate boxing-figure toys, each of said boxing-figure toys comprising:

a. a positionable base,

b. means defining a fanciful boxing figure,

c. means between said figure and said base for pivotally supporting said figure on said base for pivotal rearward movement between a normal upright position and a knocked-down position,

d. means between said figure and said base for releasibly maintaining said figure in said upright position, said maintaining means including a movable target member on said figure operative to release said maintaining means when said target member is struck and moved,

e. a pair of fist members on said figure extendable forwardly therefrom to engage the target member on the other figure, and

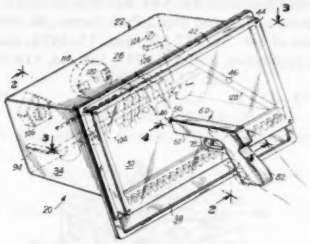
f. manually operable control means comprising a pair of control handles mounted on the base for being gripped and used to effect movement of the figure toy, each of said control handles being separately and selectively operable to effect the forward extension of one of said fist members, each of said handles comprising a compressible bulb portion, each of said bulb portions being connected to a hydraulic piston-cylinder arrangement mounted within the figure and with the piston of said arrangement directly connected to one of said forwardly extendable fist members.

3,845,957

SHOOTING GALLERY APPARATUS INCLUDING IMPACT TRANSMITTING PROJECTOR

Raymond J. Lohr; Martin Condry, both of Erie; Mahlon E. Hirsch, Fairview; Richard N. Carver, and Maxmillian P. Rogers, both of Erie, all of Pa., assignors to Louis Marx & Co., Inc., Stamford, Conn.

Filed May 29, 1973, Ser. No. 364,579
Int. Cl. A63f *9/02*
U.S. Cl. 273—101 **13 Claims**



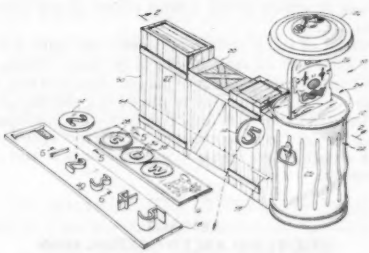
1. In a shooting gallery game, a transparent, non-magnetic wall, a magnetic projectile situated next to said wall on one side thereof, a target situated on the same side of said wall as said projectile at a substantial distance from said wall, a permanent magnet adapted to be situated by the operator on the other side of said wall from said projectile to act magnetically on said projectile for moving the latter along said wall and locating said projectile at a selected location on said one side of said wall, and manually operable impact means located next to said permanent magnet for movement with respect thereto into impact engagement therewith to transmit an impact through said permanent magnet and wall to said projectile for projecting the latter toward said target.

3,845,958

LETTERS AND NUMBERS GAME

Tormod K. Reinertsen, East Northport, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,834
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 D **17 Claims**



1. A toy comprising a plurality of chips having distinguishing characteristics and a dispenser for said chips comprising, a frame having a chip storage station and a chip dispensing station, means at said storage station for supporting a plurality of individual chips in an aligned stack; means at said dispensing station for removing individual chips from said stack and discharging them from said frame, and at least one cooperating tray having distinguishing characteristics which are complementary to the distinguishing characteristics of said chips,

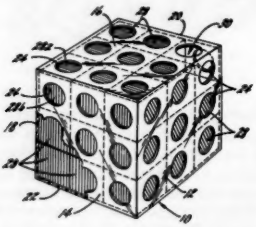
whereby said chips are adapted to be randomly placed in said storage station and dispensed therefrom by said removing means for placement in predetermined locations on said tray; said tray comprising a number tray having a plurality of raised numbers formed thereon, said chips having apertures formed therein defining numbers adapted to receive corresponding raised numbers on said tray, said raised numbers having different heights, with each raised number having a height corresponding to the thickness of the number of chips it represents.

3,845,959

THREE-DIMENSIONAL BLOCK PUZZLE

Daniel Kosarek, 36 Forest Blvd., Park Forest, Ill. 60466

Continuation of Ser. No. 217,532, Jan. 13, 1972, abandoned.
This application Nov. 14, 1973, Ser. No. 416,903
Int. Cl. A63f *9/08*
U.S. Cl. 273—153 S **10 Claims**



1. A puzzle comprising
a closed outer housing having six rectangular sides,
a multi-surfaced central block interior to and having the same exterior shape as said outer housing, said central block being smaller than said housing and so positioned within said housing that each surface of said central block is spaced from the corresponding side of the outer housing by an equal distance to define a volume between said sides and said surfaces,
a plurality of movable blocks within said defined volume, each having the same shape as said outer housing and having one or more surfaces having indicia distinguishable from that of said central block, the number of said blocks being one less than the number required to completely fill said defined volume so that a void is defined equal in volume to the volume of one of said movable blocks, and
a plurality of access ports in the sides of said outer housing to allow said movable blocks to be moved within said defined volume by selective displacement with said void, whereby said blocks may be placed in a plurality of spacial relationships with respect to each other in solving the puzzle, each solution presenting a different combination of surface indicia visible through the sides of said outer housing.

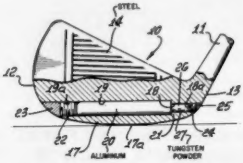
3,845,960

WEIGHT-BALANCED GOLFING IRON

Stanely C. Thompson, 7851 Talbert St. Apt. No. 1, Playa Del Rey, Calif. 90271

Filed June 11, 1973, Ser. No. 368,641
Int. Cl. A63b *53/04*
U.S. Cl. 273—171 **7 Claims**

1. In a golf iron,
a. a metallic club head having a toe and heel, a front face to strike a golf ball, a rear side, the head having an elongated base portion extending between the toe and heel,
b. there being an elongated through opening extending within the base portion between the heel and toe,
c. an elongated balancing plug extending within the opening, and
d. a relatively short plug extending within the opening and spaced from the elongated plug for reception therebetween of a selected amount of weighting material in the form of metal particles having a density substantially



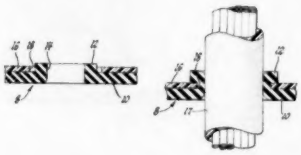
greater than the density of the head metal, said elongated plug consisting of a metal substantially less dense than the head metal,
e. said opening defined by bore means one portion of which receives the short plug at the heel end of the head, and the elongated plug retained in another portion of the bore means.

3,845,961

SELF-LOCKING SEAL FOR GENERATOR LEADS

Walter C. Byrd, III, Kettering, Ohio, assignor to General Motors Corp., Detroit, Mich.

Filed Sept. 17, 1973, Ser. No. 398,002
Int. Cl. F16j *15/10*; **F16l** *5/02*; **H01b** *17/30*
U.S. Cl. 277—212 F **1 Claim**



1. A self-locking sealing arrangement comprising:
a wall having first and second opposed surfaces and an aperture having an edge;
a seal member having a normal state and an assembled deformed state, said seal member in its normal state including a generally flat resilient base member having first and second opposed surfaces, and a resilient circular flange integrally connected to and extending from the first surface of the base member for insertion through the aperture in wall, the flange having an outer surface with a radius equal to the radius of the aperture in the wall minus the thickness of the wall, the base member and the flange having an aperture therethrough concentric with the flange; and
a cylindrical member having a radius less than the radius of the aperture in the wall and greater than the radius of the aperture in the wall minus the thickness of the base member, said cylindrical member being positioned through the seal member and the aperture in the wall to place the seal member in its assembled deformed state with the outer surface of the flange sealingly engaging the first surface of the wall, the first surface of the base member sealingly engaging the second surface of the wall and the edge of the aperture in the wall, and the second surface of the base member sealingly engaging the cylindrical member, a portion of the base member being compressed between the cylindrical member and the edge of the aperture in

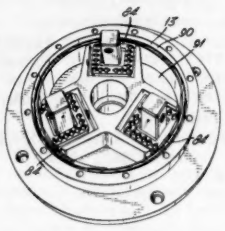
the wall, whereby the wall, seal member and cylindrical member form a self-locking sealing arrangement.

3,845,962

FLOATING WORK DRIVER CHUCK

Vallard B. Molin, 3855 Thomas Ave. North, Minneapolis, Minn. 55412

Filed Feb. 9, 1973, Ser. No. 331,051
Int. Cl. B23b *31/16*
U.S. Cl. 279—1 J **3 Claims**



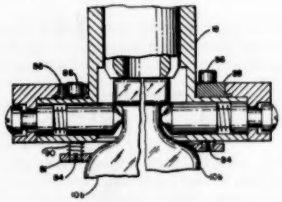
1. A chuck assembly comprising a housing adapted to be fixedly attached to a rotatable driving member of a machine tool for rotation therewith about an axis, said housing having an axial central bore, a work piece supporting center, said supporting center being coaxial with said housing and extending through said bore, a jaw frame disposed in said housing in spaced and surrounding relation to said workpiece supporting center and being transversely movable relative to said axis, said jaw frame having a plurality of at least three radially extending guide slots, work engaging jaw carriers slidably mounted in said guide slots, spring means biasing said carriers in radial directions, a split and overlapping sealing ring engaging said carriers and forming an expansible chamber with said housing, air inlet passage means in said housing having fluid communication with said chamber, said ring being pneumatically biasable into engagement with said carriers for biasing said carriers in opposite radial directions from said radial directions to effect the gripping of a workpiece.

3,845,963

ADJUSTABLE CHUCK FOR CONTAINERS OR VIALS

Richard W. Price, West Simsbury, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Continuation-in-part of Ser. No. 206,270, Dec. 8, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,455
Int. Cl. B23b *31/10*
U.S. Cl. 279—89 **25 Claims**



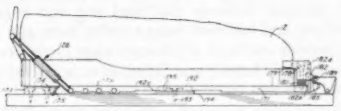
1. A chuck for releasably retaining containers of various size comprising a body portion with a central axial opening for receiving one end of the larger size container to be accommodated and having a plurality of radially extending openings communicating with said central opening, plungers slidably received in said radially extending openings, biasing means for urging said plungers radially inwardly, a container ejecting plug slidably mounted in said central body opening for movement between a normal axial position wherein said plungers engage first side abutment surfaces of said plug and a position axially spaced from said normal position, said plug being mounted for limited angular rotation in said central body opening for movement between first and second angular positions, said plug having second side abutment surfaces for stopping said plungers when said plug is in said normal axial position and in said second angular position whereby said plungers are stopped in first and second plunger positions defined by engagement with said first and second side abutment plug surface.

3,845,964

SKI BINDING APPARATUS

Ralph S. Johnson, 907 Frontier Park Ave., Cheyenne, Wyo. 82001

Filed July 27, 1972, Ser. No. 275,538
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 K **35 Claims**



1. In ski binding apparatus for releasably securing a ski boot to a ski, the combination comprising:

a binding at one end of the ski boot, said binding being yieldable to permit movement of the ski boot along the ski,

intermediate lateral movement restraining means for the ski boot establishing a pivot between the toe and heel of the ski boot about which the ski boot will turn and supporting said ski boot for controlled longitudinal sliding movement relative to the ski, and

lateral movement restraining means at the end of the ski boot opposite to said binding including cam surfaces, there being bearing surfaces opposite said cam surfaces associated with and movable with the movement of the ski boot while maintaining engagement with said cam surfaces, said cam surfaces being arranged along the ski and inclined at an angle to the length of the ski to direct the ski boot to move along and laterally outwardly upon the application of a lateral twist to the ski boot, the bearing surfaces being movable laterally past the extremities of the cam surfaces to release the ski boot laterally upon the application of a preselected amount of lateral twist to the ski boot.

3,845,965

LOW FRICTION SOLE PAD FOR SKI BINDINGS

Gordon C. Lipe, West Lake Rd., Skaneateles, N.Y. 13152

Filed Nov. 13, 1972, Ser. No. 305,836
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 C **3 Claims**

1. An anti-friction device for use with a releasable ski binding mounted on a ski having a running surface and an upper surface, comprising:

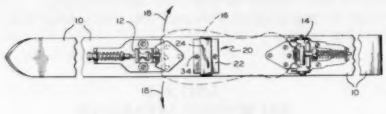
a support member adapted to be mounted on the upper surface of the ski adjacent the binding and having an engagement surface;

an endless band mounted on said support member for unrestricted transverse movement relative to the ski and having an inside surface with a portion thereof always con-

fronting said engagement surface of said support member,

said band being of a flexible and deformable material and having on its inside surface a high density of shallow lubricant-receiving recesses with cumulative volume when the band is undeformed at least sufficient to provide a substantially continuous layer of lubricant between said band and said engagement surface, and

said band having an undeformed state when minimal force is applied to urge said band into contact with said



surface wherein said cumulative volume is maximum and having a deformed state when greater force is so applied wherein said band is deformed and said cumulative volume of said recesses is reduced; and

a lubricant carried in said recesses for providing said layer of lubricant between said band and said engagement surface, said lubricant being expelled from said recesses to provide said layer of lubricant when forces are applied to place said band in said deformed state and being drawn back into said recesses when said forces are reduced.

3,845,966

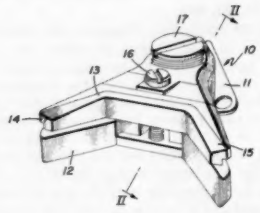
SKI BINDING

Konrad A. Ulbrich, Wellesley, Mass., assignor to Dovre Ski Binding, Inc., West Concord, Mass.

Continuation of Ser. No. 161,188, July 9, 1971, abandoned. This application Mar. 22, 1973, Ser. No. 343,976

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 T **5 Claims**



1. A ski binding, comprising

a. a base adapted to be fastened to the upper surface of a ski,

b. a pivot shaft extending vertically from the base,

c. a main body pivotally mounted on the shaft and having a rearwardly-directed lug adapted in an operative position to engage the sole of a ski boot, the shaft extending through and rotatable in a bore in the main body, a counterbore extending downwardly from the top of the main body, a screw member fitting snugly into the counterbore and threadedly engaged with the upper end of the shaft, and a coil spring lying in the counterbore concentrically of the shaft and compressed between the screw member and the bottom of the counterbore, and

d. an elongated V-shaped cam and a cam contact area opposing the cam, disposed between the base and the main body and extending radially of the pivot shaft, the contact area including a V-shaped groove whose cross-section is complemental to that of the cam, the V-shapes subtending an acute angle, and a planar surface perpendicular to the shaft, the groove and the surface of the contact area being positioned with respect to the shaft, so that, as the body is rotated with respect to the base, the cam at times engages the groove with planar contact and at other times engages the surface of the contact area, the cam and groove constituting the only release mechanism of the binding.

3,845,967

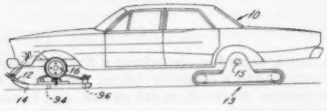
SKI CONSTRUCTION FOR VEHICLES

Roy E. O'Brien, 17834 Millar Rd., Mt. Clemens, Mich. 48043; Donald J. Leslie, 1310 N. Washington, Apt. No. 11, Royal Oak, Mich. 48067, and Michael R. Leslie, 1947 Robina Ave., Berkley, Mich. 48072

Filed Jan. 16, 1973, Ser. No. 324,205

Int. Cl. B62b *19/04*

U.S. Cl. 280—14 **8 Claims**



1. A ski construction for a vehicle comprising a ground engageable ski element fabricated of flexible sheet material, said ski element including means for attachment to an axle hub of a vehicle comprising a leaf spring structure connected to the ski element, means for securing said leaf spring structure directly to a peripheral portion of a wheel rim, said wheel rim being directly connectable to an axle hub of a vehicle in conventional manner, said ski element including an upturned forward nose portion, resilient means secured at one end to said nose portion, and means for securing the other end of said resilient means to structure of a vehicle at a position above the ski element to apply a vertical force to said nose portion to maintain said nose portion in an upwardly directed attitude and also to inhibit the turning radius of the vehicle steering system.

3,845,968

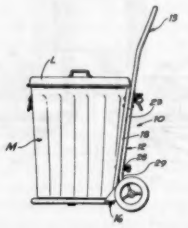
WHEELED CARRIER FOR REFUSE CONTAINERS

Mary E. Larson, P.O. Box 458, Key Largo, Fla. 33037

Filed Jan. 2, 1974, Ser. No. 429,709

Int. Cl. B62b *1/06*

U.S. Cl. 280—36 C **10 Claims**



1. A wheeled carrier for refuse containers comprising, in combination, a base frame member, a pair of spaced, parallel, upstanding side members, hinge means hinging said base

frame member at one end to the lower ends of said upstanding side members, said hinge means comprising mechanism limiting pivotal movement of said base frame member between a collapsed position upwardly in face-to-face relation against said upstanding side member and an outwardly swung position defining an angle of approximately 90° with respect to said upstanding side members, a wheel frame assembly, said wheel frame assembly comprising a pair of spaced, parallel, elongate wheel support frame members, means for removably securing said wheel support frame members in co-extensive, abutting relation, respectively, with one each of said upstanding side members, lower end portions of said wheel support frame members each comprising at their lower ends, parallel, outwardly-extending curved portions, an axle extending transversely through aligned openings in the outer ends of said curved portions, a pair of wheels journalled one each upon outer end portions of said axle, a handle member of U-shaped configuration defining a pair of spaced parallel leg portions, means interconnecting terminal end portions of said handle leg portions with upper end portions of said upstanding side members, a first cross bar, means for removably securing said cross bar between said upstanding side members and said wheel support frame members near the lower ends thereof, a second cross bar, means for adjustably securing said second cross bar between said handle legs, a container handle attachment means centrally disposed along said second cross bar, said attachment means comprising toggle mechanism interconnectable with a bail handle of a trash container supported on said base support assembly.

3,845,969

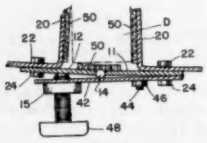
DOOR DOLLY

James H. Nadeau, 271 Zion St., Hartford, Conn. 06106

Filed July 31, 1973, Ser. No. 384,257

Int. Cl. B62b *1/12*

U.S. Cl. 280—47.13 **3 Claims**



1. A dolly for transporting large flat objects comprising;

a. a butt hinge having two horizontally extending leaves pivotally connected to one another by a hinge pin,

b. two L-shaped brackets, each of which has a base leg attached to the upper face of one of said hinge leaves, and said bracket having upstanding legs for receiving an object edgewise therebetween,

c. a clamping cross arm one end of which is attached to the lower face of one of said hinge leaves, and the other end of which defines a threaded opening oriented normally to the lower face of the other of said hinge leaves,

d. a clamping screw threadably received in said cross arm opening for engaging said other hinge leaf to urge said upstanding legs toward one another, and

e. stub shafts extending horizontally outwardly from said base legs, and said shafts rotatably supporting wheels thereon.

3,845,970

SHOCK ABSORPTION SYSTEM FOR A MOTOR VEHICLE

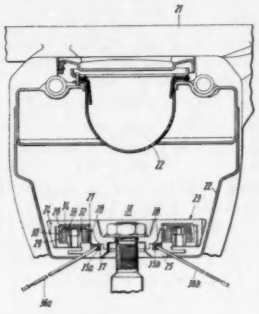
Gunter Herrmann, Ottobrun, Germany, assignor to Bayern-Chemie Gesellschaft Fur Flugchemische Antriebe Mit Beschrankter Haftung, Oschau, Germany

Filed Oct. 4, 1972, Ser. No. 294,908

Claims priority, application Germany, Oct. 9, 1971, 2150463

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **10 Claims**



1. A shock absorption system for use in motor vehicles for minimizing the danger of injury to occupants of the vehicle in the event of an accident, including an inflatable bag, a device for supplying gas for inflating said bag, and means for initiating the inflating process, wherein the improvement comprises that said device for supplying gas includes means forming an enclosed reaction chamber, said reaction chamber having openings communicating with said inflatable bag, means for forming a closure across the openings between said reaction chamber and the inflatable bag, a solid charge positioned within said reaction chamber for generating gas, said means forming an enclosed reaction chamber comprises an axially symmetrical housing comprising a lower housing part and an upper housing part threadedly secured to said lower housing part, said lower and upper housing parts combining to provide the reaction chamber with an annular configuration, a perforated cylinder positioned within the reaction chamber and concentrically of the axis of symmetry of said housing and extending between said upper and lower housing parts and forming an annular-shaped antechamber in communication with the remainder of said annular-shaped reaction chamber, and said means for initiating the inflation process located within said antechamber, so that said means for initiating the inflation process within said antechamber initiates the generation of gas from said solid charge within the remainder of said reaction chamber for the passage of the gas from said reaction chamber into said inflatable bag with said closure means displaced due to the initiation of the generation of gas.

3,845,971

RESTRAINT METAL CHIP COOLANT AND SEPARATOR

Brian K. Hamilton, Utica, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

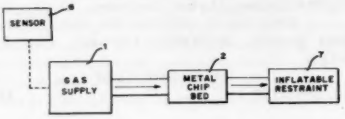
Filed Dec. 15, 1972, Ser. No. 315,700

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **4 Claims**

1. In an improved inflatable restraint system comprising a gas supply system, an inflatable restraint, and means connecting said gas supply system and said restraint for conveying gas therebetween for inflating said restraint, the improvement comprising a porous coolant and separator bed comprising metal chips maintained in said connecting means between the

gas supply system and the inflatable restraint through which at least a portion of the gas passes, at least a substantial portion



of the metal chips being generally flat and lying in a first plane and having a portion thereof in a second plane extending from and distinct from the first plane.

3,845,972

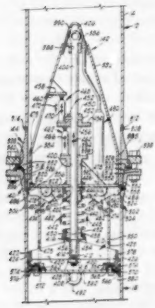
APPARATUS FOR CONNECTING UNDERWATER PIPELINES

Billy L. O'Brien, 1400 Pine St., and Heber P. O'Brien, 730 E. 14th St., both of Ada, Okla. 74820

Continuation-in-part of Ser. No. 121,788, March 8, 1971, Pat. No. 3,717,002. This application Nov. 24, 1972, Ser. No. 309,160

Int. Cl. F16l *35/00*

U.S. Cl. 285—24 **15 Claims**



1. Apparatus for positioning one end of a first pipeline and one end of a second pipeline in an interconnecting relationship underwater, comprising:

a guide coupling assembly, comprising:

a support base, having an upper end portion and a lower end portion;

a jaw member pivotally connected to a portion of the support base, a portion of the jaw member extending from the support base and engageable with a portion of the second pipeline limiting the movement of the support base in one direction for positioning the guide coupling in one direction in the second pipeline in one position of the jaw member;

guide means connected to the upper end portion of the support base, having an upper end, a lower end and a portion forming a guide surface engageable with a portion of one end of the first pipeline for guiding the first pipeline into an interconnecting relationship with one end of the second pipeline; and

means, having one portion connected to the jaw member and one portion connected to the support base, positioning the jaw member in the position engaging a portion of the second pipeline while permitting movement of the support base through a portion of the first pipeline in a direction generally opposed to the direction of movement limited via the engagement between the jaw member and the second pipeline.

3,845,973

APPARATUS FOR CONNECTING TWO PIPE ENDS BY REMOTE CONTROL

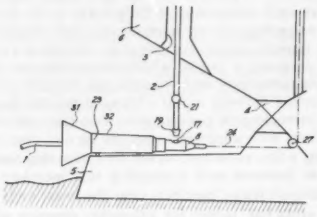
Jean Jacques Houot, Maisons-Lafitte, France, assignor to Entreprise de Recherches et d'Activites Petrolieres (ELF), Paris, France

Filed Sept. 4, 1973, Ser. No. 393,976

Claims priority, application France, Sept. 5, 1972, 72.31426

Int. Cl. F16l *35/00*

U.S. Cl. 285—26 **10 Claims**



1. In apparatus for the connection of the ends of two pipes by remote control, said apparatus comprising a funnel member having a flared portion and a narrow portion, together with a cable extending through said funnel, the improvement which comprises

an end member attached to said cable so that said cable can pull said end member through said flared portion into said narrow portion of said funnel, and means for rotatably attaching said end member to one end of one of said pipes,

cooperating means in the narrow portion of said funnel and on said end member for positioning said end member in a precise longitudinal and radial position relative to said funnel as it is pulled thereinto by said cable,

means for holding one end of the other pipe in a precise position at an angle to the axis of said funnel, and

union means projecting radially from said end member and adapted to cooperate with mating union means on said one end of said other pipe.

3,845,974

COUPLING DEVICE FOR A TRANSFER CONDUIT FOR A CRYOGENIC LIQUID

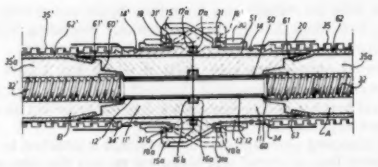
Pierre Pelloux-Gervais, Grenoble, France, assignor to L'Air Liquids, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jan. 18, 1973, Ser. No. 324,865

Claims priority, application France, Jan. 27, 1972, 72.2696

Int. Cl. F16l *11/12*

U.S. Cl. 285—47 **6 Claims**



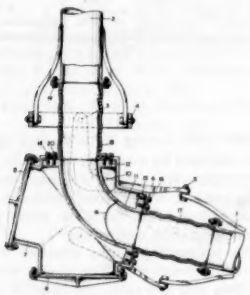
1. A coupling device for a transfer conduit conveying cryogenic liquids, said device comprising two connectable coupling bodies, one said body comprising at least one locking means actuated by rotation so as to engage with anchorage

means rigidly fixed on the other said body, heat insulation means incorporated in each said body and acting in the radial direction, said insulation means comprising an annular block of insulating material with internal and external walls enclosed by a casing on which are fixed said locking and anchorage means, each annular block having a substantially flat radial wall, at least two coaxial fluid-tight joints projecting towards the exterior beyond said radial wall, in the vicinity of the internal wall of said annular block in which is engaged an axial pipe connected to said transfer conduit which is also fixed on the internal wall of said annular block and also in the vicinity of the external wall of said annular block, whereby in the assembled position said joints are respectively applied one against the other by the effect of said locking means.

3,845,975
HINGED PIPE JOINT

Willem Jan Van Heijst, Monte Carlo, Monaco, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Mar. 9, 1973, Ser. No. 339,555
Claims priority, application Netherlands, Mar. 10, 1972, 7203232
Int. Cl. F16l *25/00*
U.S. Cl. 285—283 **5 Claims**

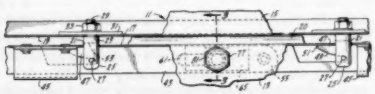


1. In a hinged pipe joint comprising a pair of rigid pipes, at least one flexible sleeve between the rigid pipes, and hinge structure interconnecting the rigid pipes and surrounding the flexible sleeve; the improvement comprising a housing, a flange secured in said housing, one end of said flexible sleeve being secured to said flange, said hinge structure being secured to said housing, at least one door through said housing in line with the axis of said flange, and a removable cover closing said opening.

3,845,976
CASKET LOCKING MECHANISM

Raymond E. Peterson, 918 Jackson Ave., River Forest, Ill. 60305

Filed Aug. 6, 1973, Ser. No. 385,979
Int. Cl. A61g *17/04*
U.S. Cl. 292—158 **6 Claims**



1. A locking mechanism for a casket including:
a locking bar slideably mounted in said casket,
an elongated link pivotally connected at one end to said locking bar,
a crank arm pivotally connected to said link and rigidly connected to a shaft, and
means formed at one end of said shaft for rotating said shaft, said link including a portion extending beyond its pivotal connection to said crank arm with said extending portion having one edge which engages stop means to limit rotation of said shaft in both clockwise and counterclockwise directions.

3,845,977
PNEUMATIC SHOCK ABSORBING TIRE BUMPER SYSTEM

Cheston Lee Eshelman, 621 N.E. 30th Ter., Miami, Fla. 33137

Filed Jan. 22, 1973, Ser. No. 325,822
Int. Cl. B60r *19/10;* **B61f** *19/04;* **B61g** *11/12*
U.S. Cl. 293—19 **7 Claims**

1. In a motor vehicle, an energy absorbing bumper system comprising in combination, a wheel mounted pneumatic tire positioned horizontally on the forward end of the vehicle so as to extend forwardly of most vehicular elements, said wheel and tire being carried by structural means on the vehicle which is constructed and arranged to accommodate limited movement of the wheel and tire rearwardly of the vehicle upon striking an obstruction forwardly of the vehicle, and a pair of movable bumper bars extending horizontally and transversely of the vehicle, one bar on each side of said wheel and tire with a bar end in contact with the tire, and fulcrum-hinge means for each bumper bar for connecting it to an adjacent part of the vehicle so that said bumper bar will be thrust forcibly against the tire when the bumper bar strikes an obstruction before it.

3,845,978
SWIVELLED CARGO RELEASE DEVICE

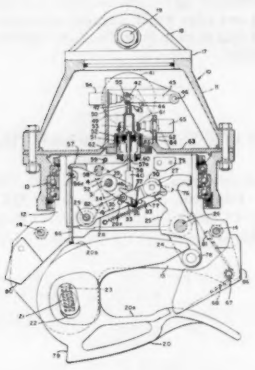
John Richard Huber, Holicong, Pa., assignor to Eastern Rotorcraft Corporation, Doylestown, Pa.

Filed Dec. 4, 1972, Ser. No. 311,446
Int. Cl. B66c *1/38*
U.S. Cl. 294—83 R **13 Claims**

1. A cargo release device including:
1. a housing assembly having:
   a. an upper housing section
   b. a lower housing section, and
   c. swivel mounting means interconnecting the upper and lower housing sections;
2. the lower housing section including a downwardly depending supporting structure;
3. a load carrying beam pivotally supported on said supporting structure,
   a. the beam pivot being positioned on an axis below the plane of the housing swivel and parallel thereto;
4. a beam latch pivotally supported on said lower housing and adapted to hold the beam in load carrying position when closed and to release the beam when open;
5. latch actuating mechanism positioned in the lower housing and linked to a connecting rod that extends between

the upper and lower housings on an axis generally aligned with the housing swivel axis;

6. said connecting rod being mounted for up and down movement along a generally vertical axis, and



7. means within the upper housing for imparting up and down movement to the connecting rod, said means being linked to an upper portion of the connecting rod through a swivel mechanism whose swivel axis is concentric with the housing swivel axis when the beam is in closed load carrying position.

3,845,979

CHARGING DEVICE

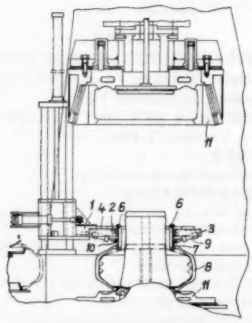
Oskar Schatz, Harburg-Neu Leversen, and Uwe Dieckmann, Hamburg, both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 5, 1973, Ser. No. 348,211

Claims priority, application Germany, Apr. 12, 1972, 2217589

Int. Cl. B66c *1/54*

U.S. Cl. 294—88 **7 Claims**



1. In a device for handling tire carcasses, especially for handling tire carcasses in horizontal position in connection with a tire press; a frame, a plurality of gripper fingers moveably mounted in said frame in circumferentially distributed relation therein and depending therefrom, and drive means in said frame disposed radially outside said fingers and connected to the radially outer sides of said fingers for moving said fingers radially for gripping a tire carcass by engagement of a bead region thereof from the inside, said frame being in the form of a horizontally disposed substantially "C" shaped plate, the central aperture in said plate being at least as large in diameter as the tire carcass bead to be gripped, support members secured to the underside of said plate, said fingers and the said drive means therefor being connected to and supported by said support members, each finger having a respective drive means and each finger and the drive means therefor being carried by a respective support member, each support member being radially adjustable on said "C" shaped plate.

3,845,980

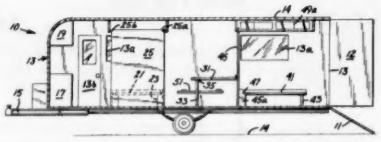
MOBILE TRAILER GARAGE WITH CONVERTIBLE FURNISHINGS

Edwin F. Grabast, Rt. 2, Box 61, Bozeman, Mont. 59715

Filed Feb. 12, 1973, Ser. No. 331,831

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 R **10 Claims**



1. In a mobile trailer having an outer shell defining therewithin a space enclosed by a ceiling, side walls, and a floor,

a bed-table combination storable under and suspended from said ceiling and convertible from a folded storage position under said ceiling to an unfolded utility position, said bed-table combination comprising:

a. a bed-table suspending means attached to said ceiling, said suspending means including pivotal mounting means for permitting said bed-table combination to move from either of said positions to the other position,

b. a generally rectangular planar support member having a first end, pivotally attached to said suspending means, and a second, moveable end opposite to said first end; said first end being relatively stationary compared to said second moveable end; one face and the sides adjacent said moveable end of said support member defining a headboard for the bed of said bed-table combination,

c. a generally flat, planar folding bed means pivotally attached at its head end to said face of said support member,

d. a table top member pivotally attached to the face opposite the face to which said folding bed means is attached.

3,845,981

MULTI-DIRECTIONAL PANEL ADJUSTMENT MEANS

Joseph A. Whitfield, Peoria, Ill., assignor to Caterpiller Tractor Co., Peoria, Ill.

Filed Oct. 19, 1972, Ser. No. 299,085

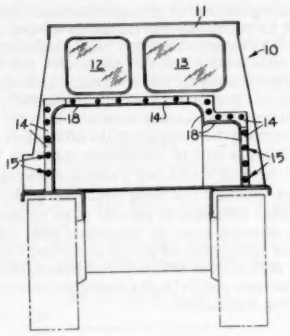
Int. Cl. B62d *27/00*

U.S. Cl. 296—28 C **8 Claims**

1. Multi-directional panel adjustment means in combination with a pair of overlying first and second panels attached together by releasable fastening means extending therethrough, said panel adjustment means comprising

an adjustment member comprising a flat, U-shaped disc having an elongated slot, open at only one end, formed therethrough, said disc mounted on said fastening means to fully abut said first panel and rotatably mounted in said

second panel for permitting multi-directional adjustment of said second panel relative to said first panel, and



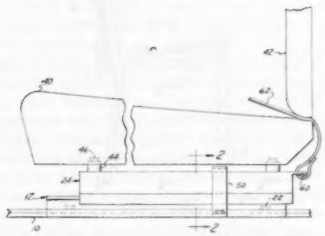
an elastomeric sealing gasket attached to a free edge of said second panel and compressed into sealing contact with a transversely disposed structural member of a vehicle.

3,845,982

SAFETY SEAT TRACK CONSTRUCTION

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed June 29, 1973, Ser. No. 374,896
Int. Cl. B60n 1/08
U.S. Cl. 296—65 A **2 Claims**



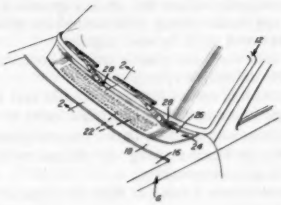
1. A simplified safety seat construction for two-way adjustment comprising a longitudinally extending track fixedly secured to the floor of a vehicle, said track having laterally outwardly extending flanges spaced above the vehicle floor, an elongated seat supporting slide movable longitudinally along said track, seat belts secured to said slide adjacent the rear thereof, said slide being of inverted channel shape having a top wall and depending side walls terminating at the bottom edges thereof in inwardly facing confronting flange receiving channels, low friction slide bearings in said channels surrounding the outer edges of said flanges, a seat, detachable fasteners fixing said seat to said slide adjacent the front and rear ends thereof carried by said slide, and a safety strap of inverted channel-shape fixedly secured to the floor of the vehicle adjacent the rear end of said track and extending transversely over said slide, said strap having a top section spaced slightly above the top wall of said slide intermediate said fasteners, and effective to limit upward movement of said slide from forces transmitted to said slide in the event of collision and to prevent bending of said flanges and the bottom walls of the channels at the lower edges of the side walls of said slide and thus to prevent separation of said slide from said track.

3,845,983

REMOVABLE COWLING COVER FOR VEHICLES

Richard D. Heintz, 38305 56th St., Des Moines, Iowa 50310

Filed June 26, 1973, Ser. No. 373,622
Int. Cl. B60j 1/20
U.S. Cl. 296—84 **5 Claims**



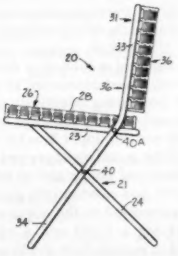
1. In combination with a vehicle of the type including a windsheild assembly, a cowl body portion extending transversely of said vehicle forwardly of the lower marginal edge of the windshield assembly and a hood disposed immediately forwardly of said cowl body portion, said cowl body portion having ventilation air intake openings formed therein, a removable stiff and shape retentive cover for said air intake openings to prevent the precipitation of dust and other foreign airborne particles through said openings when the vehicle is stationary in a dusty atmosphere or being driven through a dusty region said said cover being panel-like in configuration and of a plan size and shape to completely cover at least the area of said cowl in which said intake openings are formed and to be devoid of portions thereof covering any portions of said hood and windshield assembly, said panel-like cover also being contoured to conform to and closely overlie the outer surface of said cowl area, said cover and cowl including coacting means removably securing said cover in position over said cowl area said cowl including a pair of upwardly projecting motor oscillatable windshield wiper arm support shafts, said cover including a rear marginal edge portion having a pair of edgewise outwardly opening notches formed therein through which said shafts project.

3,845,984

FOLDING CHAIR

David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 268,870, July 3, 1972, which is a division of Ser. No. 126,808, March 22, 1971, Pat. No. 3,720,568, Continuation-in-part of Ser. No. 268,907, July 3, 1972, which is a division of Ser. No. 126,563, March 22, 1971.
This application Sept. 7, 1973, Ser. No. 395,365
Int. Cl. A47c 4/42
U.S. Cl. 297—56 **24 Claims**



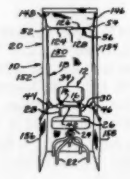
1. A folding seating apparatus, including in combination:
a. a first frame having at least two spaced-apart rigid frame portions,

b. a seat assembly having
  a series of arcuate, continuous, sinuous wires, each having two ends, each said wire closely approaching each of its immediately adjacent said wires at frequent intervals, and
  a thin sleevelike plastic coating surrounding said wires, following the sinuosity of said wires and joining said wires together where they closely approach each other, said approaches being close enough for effective bridging between them by said coating,
whereby said wires and plastic coating comprise a unitary assembly defining a cylindrical arc,
c. first mounting means for securing said seat assembly to said rigid frame portions of said first frame across a space that flattens said arc to a flatter arc and places said seat assembly in tension along the flatter cylindrical arc, which is convex upwardly,
d. a second frame having at least two spaced-apart rigid frame portions,
e. a back assembly having the structure recited for element (b) above,
f. second mounting means for securing said back assembly to said rigid frame portions of said second frame across a space that flattens said arc to a flatter arc which is convex rearwardly, and
g. pivot means connecting said first and second frames together for enabling folding,
said seat assembly when said seating apparatus is folded nesting within said back assembly, with part of the lower surface of said seat assembly lying within the chord across said back assembly.

3,845,985
DRAFT SHIELD

Gerda A. Behrend, 10351 Dickens St., Westchester, Ill. 60153, and Fritz H. Pahlow, Hillside, Ill., assignors to said Behrend, by said Pahlow

Filed Mar. 6, 1973, Ser. No. 338,460
Int. Cl. A47c 7/10, 29/00
U.S. Cl. 297—184 **1 Claim**

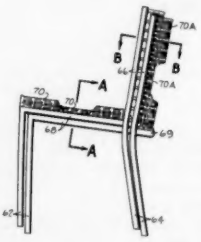


1. A draft shield of the character described mounted on an office chair and supported thereby comprising, a clamp releasably secured to an office chair, a clamp rod secured to the clamp, a lower bracket joint mounted on each of the opposed ends of the clamp rod, a post connected to each of the lower bracket joints, each post being selectively positionable to an attitude either substantially perpendicular to or substantially parallel to the clamp rod, an upper bracket connected to the upper end of each of the posts, an upper rod connected to the upper brackets, a front rod connected to the upper brackets and being spaced from and substantially parallel to the upper rod, and a curtain connected to the upper rod and the front rod, said curtain having a panel and a pair of side panels extending downward to protect from drafts an occupant of the office chair, a roof rod connected to each of the upper brackets and extendible outwardly therefrom, the front rod having each end connected to one of the roof rods, said front rod being separable to facilitate storage, and said upper rod being separable to facilitate storage, each of the posts includes a pair of telescoping members to facilitate storage of the draft shield, each lower bracket joint includes an end block secured to its respective end of the clamp rod, a double rod bracket pivotedly mounted on its respective end block, each double rod bracket having one end of its respective post secured therein, and a lock for selectively and releasably locking each double rod bracket to its repsective end block, including a side rod pivotedly connected to each of the double rod brackets for selectively positioning the side rod either substantially parallel to its respective post or in an attitude substantially perpendicular to said post, a side curtain supportable on the side rod for further protecting the occupant of the office chair, each of the posts including a pair of telescoping members to facilitate storage of the draft shield, and a roof rod connected to each of the upper brackets and being selectively positionable in an attitude either substantially parallel to its respective post or extending outward from its respective post, the front rod having each end connected to one of the roof rods, said front rod being separable to have portions positionable in an attitude substantially parallel to the respective roof rods, and said curtain being transparent.

3,845,986
STACKABLE SEATING UNITS

David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 268,870, July 3, 1972, which is a division of Ser. No. 126,808, March 22, 1971, Pat. No. 3,720,568, Continuation-in-part of Ser. No. 268,907, July 3, 1972, which is a division of Ser. No. 126,563, March 22, 1971. This application Sept. 7, 1973, Ser. No. 395,266
Int. Cl. A47c 3/04
U.S. Cl. 297—239 **15 Claims**



1. A stacking chair, including in combination:
a. a frame having at least two spaced-apart rigid side frame portions, two front legs, two rear legs, and two spaced-apart rigid back frame portions, said front legs and said rear legs being spaced apart at different distances and being operatively connected with their respective frame portions to enable compact stacking,
b. a seat assembly and a back assembly, each having
  a series of arcuate, continuous, sinuous wires, each having two ends, each said wire closely approaching each of its immediately adjacent said wires at frequent intervals, and
  a thin sleevelike stretchable plastic coating surrounding said wires, following the sinuosity of said wires and joining said wires together where they closely approach each other, said approaches being close enough for effective bridging between them by said coating,
  whereby said wires and plastic coating comprise a unitary assembly defining a cylindrical arc,
c. first mounting means for securing said seat assembly to said rigid side frame portions across a space that flattens said arc to a flatter arc and places said seat assembly in tension along the flatter cylindrical arc, which is convex upwardly, and

d. second mounting means for securing said back assembly to said rigid back frame portions across a space that flattens said arc to a flatter arc which is convex rearwardly,

each said seat assembly, when a plurality of said chairs are stacked, nesting over said seat assembly of the chair below, with part of the lower surface of each lower seat assembly lying within the chord across the seat assembly of said chair immediately above, the back assemblies being similarly nested.

3,845,987

VEHICLE SEATING

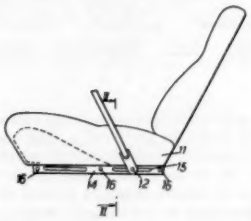
Gordon Dennis Bashford, Balsall Common, Nr. Coventry, England, assignor to The Rover Company Limited, Warwickshire, England

Filed July 16, 1973, Ser. No. 379,827

Claims priority, application Great Britain, Aug. 19, 1972, 38797/72

Int. Cl. A62b *35/00*

U.S. Cl. 297—385 **6 Claims**



1. A vehicle having a seat mounted on a runner including a channel portion and receiver means, said runner being attached to said vehicle, said vehicle comprising:

i. a frame structure for said seat;

ii. a rigid member mounted on the frame structure;

iii. a seat belt anchorage attached to the rigid member; and

iv. a slider mounted on the rigid member for slidable engagement with the runner; the slider including a deformable component adapted, when a load in excess of a predetermined load is applied to the anchorage, to deform so that the rigid member is deflected, relative to the channel portion sufficiently to cause engagement between the rigid member and the receiver portion, thereby limiting further deflection of the rigid member relative to the channel portion.

3,845,988

EASY-TO-ASSEMBLE STRUCTURE

William F. Fleisch, 126 Campbell Ave., Williston Park, N.Y. 11596, and Walter Pousche, 5805 Metropolitan Ave., Brooklyn, N.Y. 11237

Filed June 19, 1972, Ser. No. 264,207

Int. Cl. A47c *4/02*

U.S. Cl. 297—440 **26 Claims**

1. An assembled structure comprising:

a rigid and self-standing supporting device including at least one hollowed post that contains therein wall means defining at least an elongated slot, and having a generally vertical supporting surface and also having a different supporting surface in angular relation with the vertical supporting surface;

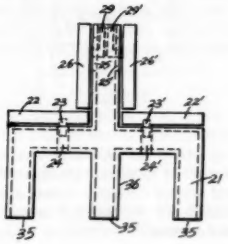
a first structural member having an upper surface and a lower surface with the lower surface resting in bearing engagement with the different supporting surface;

a second structural member having a front major surface and a rear major surface with at least a portion of the rear major surface bearing against the vertical supporting surface so as to have a prescribed spatial relation relative to the first member, the second member also having a lower edge resting in weight-supporting, bearing contact with the top surface of a selected portion of the first member placed thereunder; and

locking means for securing the second member in counter-gravity locking engagement with the vertical supporting surface, the weight of the second member tending to cause the second member to slip out of the locking engagement but being prevented from doing so by the selected portion placed underneath the second member;

said locking means comprising hook means attached to the second member and having an arm projecting rearwardly from the rear major surface, the arm turning upwardly and terminating into a generally vertical portion, the arm and the vertical portion having a total height less than the height of the slot so as to allow their insertion into the hollowed post through the slot to achieve the locking engagement,

the height of the slot being greater than the thickness of the selected portion with the positive difference therebetween being less than the total height whereby the second member is movable against gravity to allow placing the first member thereunder for instantly completing the assembly of the structure but once so placed, the first member through the selected portion thereof prevents the second member from moving sufficiently downward to allow the hook means to be disengaged from the slot; and whereby the assembled structure can be disassembled by first elevating the second member sufficiently to allow removing the first member from underneath the second member thereby permitting the second member to be lowered before the hook means can be disengaged from the slot.



3,845,989

EXCAVATING APPARATUS

George Ylonen, Lac Du Bonnet, Manitoba, Canada

Filed May 9, 1973, Ser. No. 358,501

Claims priority, application Canada, Jan. 31, 1973, 162493

Int. Cl. E21d *1/08*

U.S. Cl. 299—13 **18 Claims**

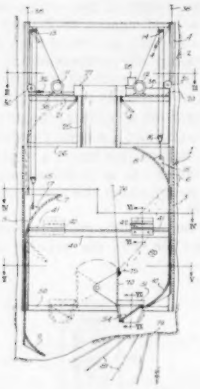
1. Excavation apparatus, comprising:

a. a frame capable of being disposed in a shaft to be further excavated:

b. first and second deflector means carried inside said frame on opposite sides thereof and each capable of being raised and lowered; and

c. movable bulkhead means carried by said frame and capable of being disposed between said first and second deflector means in a first position in which said bulkhead means cooperates with the first deflector means in a raised position to form a first muck entrapment container, and a second position in which said bulkhead means cooperates with the second deflector means in a raised position to provide a second muck entrapment

container; the arrangement being such that on blasting a bench forming the base of the shaft on the side of said first deflector means, muck is deflected upwardly and laterally by the second deflector means in a lowered position into the first muck entrapment container for subsequent removal from the shaft, the operation thereafter being repeatable for successive benches on alternate sides of the shaft by successive reversal of the positions of the first and second deflector means and movement of said bulkhead means to form said second and first muck entrapment containers.



3,845,990

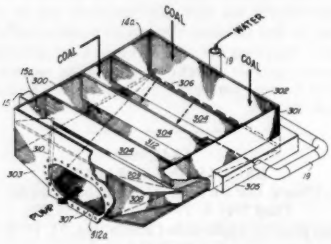
SLURRY HOPPER SYSTEM

David L. McCain, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 298,118, Oct. 16, 1972. This application Aug. 21, 1973, Ser. No. 389,272

Int. Cl. B65g *53/30*

U.S. Cl. 302—15 **9 Claims**



1. A hopper assembly for forming a slurry of a granular solid product and water in restricted spaces for transportation by a slurry pump, comprising:

an open-topped tank having horizontal dimensions greater than vertical dimensions and having interconnected end walls and side walls and a bottom tapered downwardly toward one end wall;

means for feeding water into the tank adjacent the higher end of the bottom;

means for feeding the granular solid into the tank adjacent the higher end of the bottom;

means adjacent the lower end of the tank bottom forming an outlet for the slurry to the pump;

means in the tank limiting the flow of water through the upper portion of the tank to minimize turbulence; and

means for maintaining the water at a predetermined level in the tank.

3,845,991

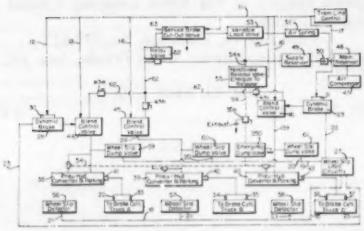
BRAKE SYSTEM FOR A LIGHT RAIL VEHICLE

Thomas Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,529

Int. Cl. B60t *13/74*

U.S. Cl. 303—3 **16 Claims**



1. A brake system for light rail vehicles comprising

a. a dynamic brake for said vehicle, said brake including means for generating variable electric current upon application of the dynamic brake, said means including an impedance to receive at least a portion of the variable current generated by said dynamic brake,

b. fluid operated friction brakes for said vehicle, said brakes including means responsive to variations in fluid pressure for actuating said friction brakes,

c. electrical control means for energizing said dynamic brake and said fluid operated friction brakes to effect braking of the vehicle,

d. fluid pressure control means for providing variations in the fluid pressures applied to said friction brake means, said control means including

1. blending means for adjusting the fluid pressure applied to said friction brakes, said blending means including an electropneumatic transducer which responds to variations in both the electrical current received by said impedance and an electrical current produced by said electric control means, to vary the fluid pressure supplied to said friction brakes,

2. variable load valve means for controlling the fluid pressure supplied to said blending means, said means including an air spring and proportional valve, said valve being responsive to pressure variations in said air spring to vary the fluid pressures supplied to said blending means, and

e. a skid controller including detector means for detecting skid condition and a release valve actuated by said controller for venting the fluid pressure supplied to said friction brakes, when said detector means detects a skid condition.

3,845,992

HYDRAULIC PRESSURE CONTROL APPARATUS

Katsuki Takayama, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Prefecture, Japan

Filed Mar. 6, 1973, Ser. No. 338,542

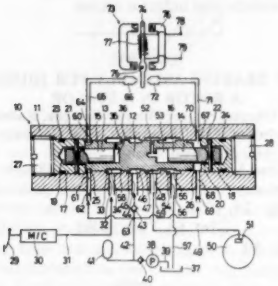
Claims priority, application Japan, Mar. 14, 1972, 47-25922

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **4 Claims**

1. An apparatus for controlling the hydraulic pressure in a control system for controlling a vehicle comprising

a first source of fluid under pressure responsive to the operation of a pedal,
a second source of fluid under pressure,
an actuator means responsive to fluid pressure for controlling the vehicle,
an electrically operated signal means responsive to the rotational state of a vehicle wheel for varying the fluid pressure on said actuator means,
and a servo valve, said servo valve comprising,
a cylinder housing having closed end walls,
a piston slidably fitted within said cylinder housing and having an opposed opening at each end thereof,
a pair of longitudinal members, one end of each member being mounted in each opposed opening in said piston, and the other ends of said members being affixed to the closed ends of said cylinder housing, the inner ends of said longitudinal members being spaced from the inner ends of the opposed openings in said piston to form two compartments,
a first passageway for connecting one of the compartments to said first source of fluid under pressure,



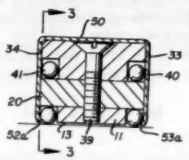
a second passageway for connecting the other compartment to said actuator means,
a third passageway for connecting the other compartment to a drain, said third passageway being closed to the drain when fluid pressure is applied from said first source through said first passageway to move said piston and to open said second passageway to actuate said actuator means by fluid pressure,
a fourth passageway for connecting the other compartment to said second source of fluid under pressure,
the opposed outer ends of said piston being spaced from the closed ends of said cylinder housing to form opposed chambers, said chambers being connected to said second source of fluid pressure and to said electrically operated signal means,
said signal means including means to vary the fluid pressure in said chambers in accordance with the state of rotation of the wheel of the vehicle to increase or decrease the fluid pressure in the other compartment by varying the movement of said piston and thus vary the pressure applied to said actuator means.

3,845,993
RECIRCULATING BALL FLAT WAY BEARING ASSEMBLY

Frederick S. Schiler, Stow, Ohio, assignor to Portage Machine Company, Akron, Ohio

Filed Aug. 31, 1973, Ser. No. 393,422
Int. Cl. F16c *31/04*
U.S. Cl. 308—6 **5 Claims**

1. A recirculating bearing assembly comprising;
A. a base plate having opposed partial ball runs therein;
B. a guide member secured to said base plate;
C. a body portion
1. secured to said base plate and said guide member and
2. having opposed partial ball runs which cooperate with said guide member and said partial ball runs of said base plate to form opposed endless ball runs;
D. a plurality of ball bearings received in said endless ball runs; and

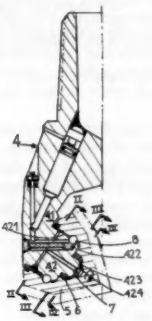


E. a cover plate
1. telescopically received over said body portion, said guide member, and said base plate, and
2. including means for retaining said balls in place for at least a portion of the length of said endless ball runs.

3,845,994
PLAIN BEARING WITH HIGH LOAD CAPACITY, PARTICULARLY FOR BORING TOOLS WITH CUTTING WHEELS

Roger Trey, Tarbes, France, assignor to Creusot-Loire, Paris, France

Filed Apr. 9, 1973, Ser. No. 349,045
Claims priority, application France, Apr. 25, 1972, 72.14609
Int. Cl. F16c *33/66*
U.S. Cl. 308—8.2 **3 Claims**



1. Plain bearing with high load capacity, for boring tool with cutting wheels including:
a tool body which can be connected to a string of rods,
at least one spindle rigidly attached to the body and provided with at least one bearing surface,
at least one rotary cutting wheel mounted on a spindle provided internally with at least one rubbing surface,
a lubricant reservoir supplying grease to the rubbing surfaces,
at least one ball-type bearing for immobilizing a cutting wheel on its spindle,
the grease containing fine particles of at least one frictional material which is soft relative to the hard materials of the rubbing organs and has good resistance to seizing by insolubility relative to at least one of the said materials, at least one of the cutting wheels having grooves around

the whole of at least one rubbing surface, the rear sides of said grooves considered in the direction of rotation of the said organ being substantially perpendicular to the rubbing surface.

3,845,995

MAGNETICALLY MOUNTED ROTOR

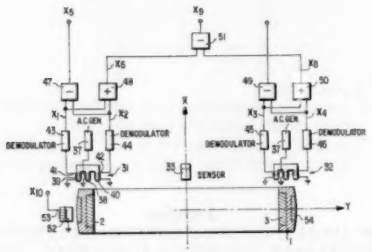
Heinz Wehde, Rothenberg, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Feb. 27, 1973, Ser. No. 336,215

Claims priority, application Germany, Mar. 8, 1972, 2210995

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **5 Claims**



1. A magnetic device comprising, in combination:

a stator;

a rotor disposed for rotation relative to said stator;

a plurality of permanent magnets mounted on, and spaced around the circumference of, said rotor to be in the form of a ring with the magnets alternating in polarity around said rotor circumference in a manner such that the magnetic field lines extend substantially parallel to a surface of said rotor between said rotor and said stator in regions between adjacent magnets and extend substantially perpendicular to such rotor surface in the region of each magnet;

a plurality of windings disposed on said stator and composed of first and second conductor groups distributed around the circumference of said stator to intersect said field lines, with the conductors of said first group being transverse to the conductors of said second group, the conductors of both said groups being substantially parallel to such rotor surface, the conductors of said first group being oriented transverse to the field lines in regions between adjacent magnets, and the conductors of said second group being oriented transverse to the field lines in the region of each magnet; and

current generating means connected to said windings for providing currents in said windings which create forces acting on the rotor in the axial, radial and tangential directions, relative to the direction of rotor rotation, for driving and positioning said rotor with respect to said stator.

3,845,996

BEARING SYSTEMS

Werner Geweke, Rodenberg, Germany, assignor to Padana AG, Zug, Switzerland

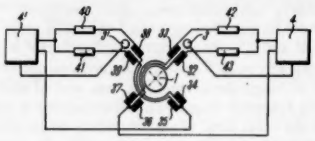
Filed Mar. 16, 1973, Ser. No. 342,149

Claims priority, application Germany, Mar. 20, 1972, 2213513

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **11 Claims**

1. In a D.C. controlled magnetic bearing system for a body having electromagnetic means comprising magnetizing coil means for exerting magnetic forces on said body, sensor means for producing error signals responsive to displacement of said body from a predetermined position and regulating means for producing corrective signals for said magnetizing coil means responsively to said error signals: the improvement comprising circuitry having two branches each disposed to



conduct said corrective signals from said regulating means to said magnetizing coil means, one of said branches comprising capacitor means and the other of said branches comprising at least one of resistor and inductor means.

3,845,997

MAGNETIC BEARING ASSEMBLY FOR JOURNALLING A ROTOR IN A STALOR

Karl Boden, Oberteuringen; Werner Geweke, Rodenberg, and Dietrich Scheffer, Friedrichshafen, all of Germany, assignors to Padana AG, Zug, Switzerland

Filed Mar. 19, 1973, Ser. No. 342,893

Claims priority, application Germany, Mar. 20, 1972, 2213522; Mar. 20, 1972, 2213465

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **30 Claims**

1. A magnetic bearing assembly for journalling in a stator a rotor subject to a steady force in a direction transverse to its rotational axis and having ferromagnetic portions comprising radial bearing means cooperating with said ferromagnetic portions for holding the rotor on a desired axis of rotation, means for controlling said radial bearing means, an annular air gap being defined between said rotor and said bearing means, and magnetic means for generating a magnetic field within said air gap, said magnetic means having a first magnetic field component which is constant in radial directions around the periphery of the air gap, and a second magnetic field component superimposed on said first magnetic field component, said second magnetic field component varying in radial directions around the periphery of the air gap and generating a constant force acting in opposition to the steady transverse forces acting on the rotor.

3,845,998

WINDSHIELD WIPER LINKAGE BUSHING

Warren W. McElhinney, Birmingham, Mich., and James C. Beaudette, Essex, Ontario, Canada, assignors to Chrysler Corporation, Highland Park, Mich.

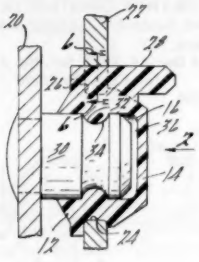
Filed Dec. 22, 1972, Ser. No. 317,855

Int. Cl. F16c *33/74, 27/00*

U.S. Cl. 308—36.1 **3 Claims**

1. In a windshield wiper system employing motion transmit-

ting linkage interconnected by journaling a stud of one linkage member within a bushing carried by a second linkage member, an improved linkage coupling arrangement for accommodating canting and rotational movement as between the interconnected linkage members, said linkage coupling arrangement comprising a first linkage member having an aperture therethrough, a resilient one-piece bushing having a body portion with oppositely disposed first and second end portions and an annular groove extending transversely about the outer surface of said body intermediate said bushing end portions, said bushing being located in the aperture of said first linkage



member and retained therein by engagement of said first linkage member in said bushing groove, a bore in said bushing body extending through the first end portion and terminating adjacent the second end portion such that said second end portion defines an integrally formed cap of said bore, a stud projecting from the second of the linkages being interconnected and journaled in the bore of said bushing, and a seal surface in the first end portion of said bushing, said seal being formed by varying the diameter of said bore to provide a tapered surface capable of making sealing contact with said stud.

3,845,999

BEARING ASSEMBLY

George A. Zimmer, Ithaca, N.Y., and Hilarius S. Struttmann, St. Charles, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 278,139, Aug. 4, 1972. This application Aug. 30, 1973, Ser. No. 393,113

Int. Cl. F16c *23/00, 33/00*

U.S. Cl. 308—194 **3 Claims**

1. A self-aligning bearing comprising:

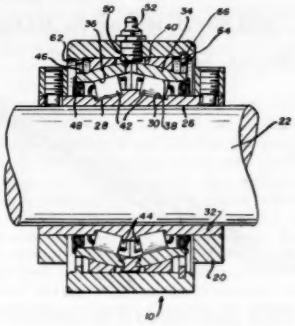
a housing having a generally cylindrically surfaced opening therethrough, said housing being adapted to be fixed to a support.

a bearing assembly received in said opening, said bearing assembly comprising:

an inner race having a central cylindrical opening for receiving a shaft and outer spaced frusto-conical raceways; an outer race having an outer spherical surface and inner spaced frusto-conical raceways; and

sets of rollers, each set being between opposed inner and outer raceways and in rolling contact therewith;

ring means comprising a pair of annular ring members each having a continuous annular inner spherical surface and a continuous outer cylindrical surface said ring members being located between the outer spherical surface of said outer race and said cylindrical surface of said housing with one ring member being opposite one set of rollers and the other being opposite the other set of rollers, said annular ring members permitting pivotable movement of said bearing assembly with respect to said housing in response to shaft misalignment relative to said support, means for retaining said ring members in said housing



permitting lateral movement of said bearing assembly relative to said housing, said retaining means comprising a groove in said housing, a snap ring in said groove and a spring washer between a ring means and a snap ring.

3,846,000

WIPER BEARING FOR A WINDSHIELD WIPER FOR MOTOR VEHICLES

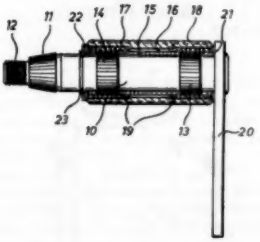
Alfred Kohler, Bietigheim, Wurttemberg, Germany, assignor to SWF Spezialfabrik Fur Autozubehor Gustav Rau GMBH Bietigheim, Germany

Filed Sept. 7, 1971, Ser. No. 178,140

Claims priority, application Germany, Mar. 11, 1971, G 71 09 168.4

Int. Cl. F16c *33/20*

U.S. Cl. 308–238 **7 Claims**



1. Wiper drive for a windshield wiper for motor vehicles, comprising a bearing bush have a bore with two intermediate plastic sleeve therein, a wiper shaft for a wiper arm having a drive crank and being rotatably mounted in said plastic sleeve within said bearing bush, said wiper shaft having a plastic coat non-rotatably secured thereto at least in the range of said sleeve of said bearing bush said two plastic intermediate sleeves being arranged in axially spaced relationship to each other, the inner bore of the bearing bush having recesses at each end in which said sleeves are respectively engaged said plastic coat and said bearing bush extending between the end faces of said sleeves, and a lubricating chamber formed between said sleeves.

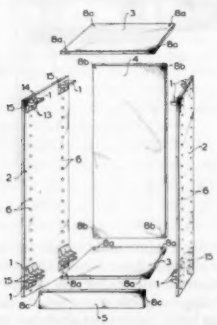
3,846,001
PLASTIC GUIDE FOR DRAWER
Edward L. Kaplan, Northbrook, and Gerhard Cless, Skokie, both of Ill., assignors to Kenneth H. Gutner, Highland Park, Ill.
Filed June 21, 1973, Ser. No. 372,228
Int. Cl. F16c 21/00
U.S. Cl. 308—3.6 3 Claims

1. A drawer guide adapted to be mounted on a furniture piece to guide the movement of a drawer positioned over the front and rear parting rails of said furniture piece and equipped with a channel shaped slide comprising

a unitary elongated plastic element having upper and lower integral horizontally extending flanges integrated by a vertically extending web to define a generally I-shape and transverse section and equipped with an aperture adjacent each end for receiving a fastener to secure the element to said parting rails,

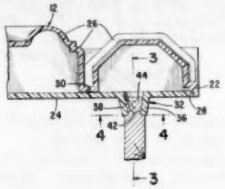
said element further including an integral reinforcement on the underside of said top flange, said top flange and reinforcement being integrated at said front end, at least one of the upper walls of said flange and lower wall of said reinforcement being tapered to facilitate engagement of said slide with said guide.

3,846,002
BUILDING UNIT FOR FURNITURE
Reinhard-Heinrich Floetotto, Brackweder Strasse 52, D483-Gutersloh, Germany
Filed Mar. 9, 1973, Ser. No. 339,525
Claims priority, application Germany, Mar. 10, 1972, 2211733
Int. Cl. A47b 77/00
U.S. Cl. 312—107 6 Claims



1. In a building unit for furniture comprising sidewall pieces, intermediate pieces and apertured connecting pieces; said sidewall and intermediate pieces being provided with preformed holes, the improvement comprising said sidewall and intermediate pieces being connected by means of connecting pieces having mounting surfaces for said sidewall and intermediate pieces and apertures extending through said pieces for receiving fastening elements, said connecting pieces comprising two integral portions having two mutually perpendicular main mounting surfaces through which extend first and second apertures, said connecting pieces further comprising auxiliary mounting surfaces formed on both sides of said connecting piece portions perpendicular to said main mounting surfaces with a third aperture perependicular to said first and second apertures extending through the juncture region of said portions and through said auxiliary mounting surfaces.

3,846,003
DRAWER CONSTRUCTION
Jerry E. Rockwell, Sanford, N.C., assignor to The Singer Company, New York, N.Y.
Filed Dec. 18, 1972, Ser. No. 316,204
Int. Cl. A47b 88/00
U.S. Cl. 312—204 4 Claims

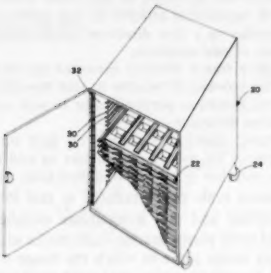


1. In a drawer comprising a bottom, a pair of opposed sides connected to opposite sides of the bottom, a rear wall connected to the rear of the bottom and the sides, and a synthetic plastic front comprising a front panel and a back panel, the front surface of the front panel having a decorative undulating contour, means for securing the front panel to the back panel with portions of the front panel abutting the back panel and portions of the front panel spaced from the back panel to define hollows therebetween, a tenon formed on the front of each of said sides, and means defining a pair of mortise prominent of the rear surface of the back panel for receiving said tenons to form interlocking joints between the front and the sides, each mortise comprising a pair of spaced converging ribs integrally formed on the back panel and an integral cross rib connecting the tops of the spaced ribs.

3,846,004
PHARMACEUTICAL CABINET
Kenneth D. Relyea, Grove City, Ohio, assignor to Drustar Unit Dose Systems, Inc., Grove City, Ohio
Filed Oct. 30, 1972, Ser. No. 302,257
Int. Cl. A47b 81/00, 91/00
U.S. Cl. 312—209 3 Claims

1. An apparatus for the storage and distribution of individual unit dose containers of pharmaceuticals comprising, in combination a portable housing means including at least one side wall opening having a closure means and a plurality of parallel, vertically spaced tracks on opposite sides of said opening and (b) a plurality of unitary trays for receipt of said containers removably and slidably mounted to said tracks in vertically spaced relationship each of said trays including a plurality of container-receiving recesses spaced from one another in substantially parallel rows and provided with slot means recessed below the top surface of said tray and disposed adjacent and parallel to each of said rows of recesses, each of said slot means arranged parallel to said tracks and adapted to removably receive a plurality of card-like strips extending upwardly above the top surface of said tray and provided with predetermined indicia, said trays being vertically spaced from one another and retained in said housing in a spaced relationship which defines a vertical clearance be-

tween the top surface of a tray and the bottom surface of the tray recesses in the upper adjacent tray which is substantially less than the depth of a unit dose container adapted to be



received in said tray recesses, each of said trays having a downwardly opening corridor formed beneath its slot means and above the slot means of the next lower adjacent tray to permit said trays having said strips mounted therein to be partially nested but allowing individual trays to be slideably withdrawn without interference.

3,846,005

UTENSIL STORAGE UNIT

Marie R. Harper, 13947 Whiterock, La Mirada, Calif. 90638, and Maxine R. Blea, 12906 Longworth, Norwalk, Calif. 90650

Continuation-in-part of Ser. No. 296,716, July 7, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 394,299

Int. Cl. A47b *61/02*; **A47f** *5/08*

U.S. Cl. 312—248 **2 Claims**

1. A utensil storage unit operably attached to the bottom of a kitchen cabinet shelf, wherein knives and the like are removably stored, said unit comprising:

a box-like housing having

a front wall,

a rear wall,

a pair of side walls interconnected to said front and rear walls, and

a bottom wall;

a hinging means secured to one end of said housing, whereby said housing can be rotated in a downward, angular, open position, and wherein said hinge means comprises:

a stationary arm member fixedly secured to said cabinet, a second arm member secured to said housing,

a pivot pin interconnecting both of said arm members, whereby said second arm rotates thereon with respect to said stationary arm member;

a biasing spring supported by said stationary arm member, and wherein said spring includes:

a depending leg biased against said stationary arm member,

an upstanding biased leg, and

a roller mounted to the upstanding leg, whereby direct latching contact is made with said second arm member when said housing is moved to a closed position;

a latching means positioned on said unit to hold said housing in a closed position; and

a utensil-mounting block removably disposed within said housing, said block having a plurality of diagonal, transverse slots for reception of said utensils, said hinge means is combined with said latching means, and wherein said roller engages an outer, cammed edge surface of said second leg to hold said housing in a closed, latched position; the bottom wall of said housing includes an elongated rib member formed as an integral part thereof to protrude upwardly therefrom, and wherein said utensil-mounting block is provided with a transverse keyway for reception of said rib member, thereby allowing said block to be removably positioned along said rib member.

3,846,006

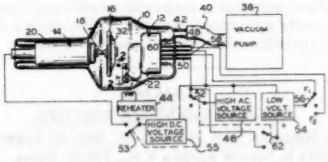
METHOD OF MANUFACTURING OF X-RAY TUBE HAVING THORIATED TUNGSTEN FILAMENT

Zed J. Atlee, Oak Brook, and Robert M. Gager, Elmhurst, both of Ill., assignors to Picker Corporation, Cleveland, Ohio

Filed Feb. 24, 1972, Ser. No. 228,951

Int. Cl. H01j *9/00*

U.S. Cl. 316—26 **15 Claims**



1. A method of manufacture of an x-ray tube having an activated tungsten filament cathode, including the steps of:

assembling an unactivated filament of tungsten and a rare earth metal oxide, a focusing electrode, and a target anode within an envelope;

evacuating gas from the envelope;

applying a sufficiently high voltage between the unactivated filament and the focusing electrode adjacent thereto during said evacuation to cause field emission discharges between said filament and said focusing electrode thereby to effect localized heating and vaporization of irregularities on their discharge surfaces, and maintaining said high voltage until the surfaces of said filament and focusing electrode are made smoother to prevent further field emission discharges at said voltage;

thereafter heating the unactivated filament during said evacuation above the temperature necessary to convert said metal oxide to an electron emissive metal having a lower thermionic work function than tungsten and to cause a layer of said emissive metal to form on the surface of said filament and provide an activated filament;

bombarding the target anode with electrons while continuing said evacuation; and

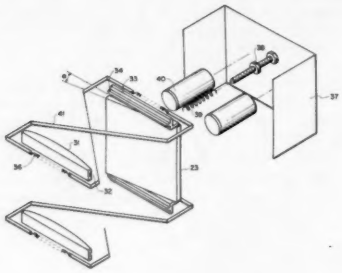
thereafter terminating said evacuation and sealing said tube envelope.

3,846,007

METHOD AND APPARATUS FOR DEFOCUS COMPENSATION OF A CONVERGENT BEAM SCANNER

William S. Flogaus, Alexandria, and Mitsumasa Masutani, Ft. Belvoir, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 23, 1973, Ser. No. 408,904
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **4 Claims**



1. In an optical scanning system, wherein a linear array of electro-optical elements is optically coupled to a lens system by a variable reflector having at least one planar scanning mirror, the improvement which comprises:

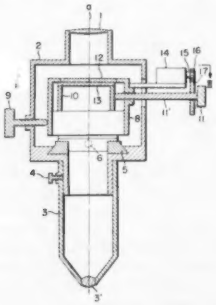
a drive means interconnecting said array and said mirror to provide relative rotation therebetween only about an axis in the plane of the reflecting surface on said mirror parallel to said linear array and to provide relative translation therebetween only normal to said linear array the rotation and translation being interreiated such that said reflecting surface maintains a tangential relationship with a right circularly cylindrical reference surface having an axis in fixed parallel relationship to said linear array.

3,846,008

MEASUREMENT MICROSCOPE

Masaru Sobajima, and Jinichi Kato, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 26, 1973, Ser. No. 401,077
Claims priority, application Japan, Sept. 30, 1972, 47-98184
Int. Cl. G02b *27/36*
U.S. Cl. 350—10 **2 Claims**



1. A measurement microscope comprising:

an eyepiece assembly including an eyepiece; and

a microscope body tube including an objective optically aligned with said eyepiece, said eyepiece assembly being rotatable relative to said microscope body tube;

said eyepiece assembly comprising:

an outer frame member having said eyepiece secured therewithin;

a movable member mounted in said outer frame member for slidable movement relative to and within said outer frame member in a first direction perpendicular to the optical axis of said eyepiece;

an intermediate frame member mounted on said movable member for movement relative to said movable member in a second direction perpendicular to said optical axis and said first direction;

an inner frame member mounted on said intermediate frame member for movement relative to said intermediate frame member in said second direction; and

two transparent scale plates secured to said intermediate frame member and said inner frame member, respectively, said scale plates bearing scale marks so as to register with an image plane in which the image of a sample is formed by said objective, said scale marks of said two scale plates being arranged in two orthogonal directions forming an angle of 45° with said first and second directions;

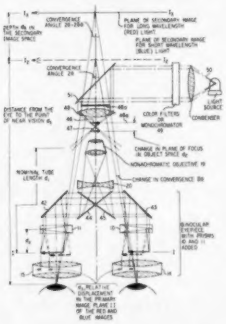
said movable member, said intermediate and said inner frame member being extraneously adjustable and movable.

3,846,009

APPARATUS FOR ENHANCED DEPTH OF FIELD VIEWING

Jeofry Stuart Courtney-Pratt, Locust, N.J., and Richard Langton Gregory, Gloucestershire, England, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 10, 1973, Ser. No. 395,398
Int. Cl. G02b *21/06*
U.S. Cl. 350—87 **13 Claims**



1. Apparatus for microscopically viewing a specimen over a large field depth, comprising:

a microscope objective admitting light over a substantial portion of the visible spectrum and including means for bringing to focus in the same primary image plane at least two specific and different light wavelengths, each emanating from a different object plane within the field depth,

means for mounting a specimen within a zone traversed by said different object planes, and

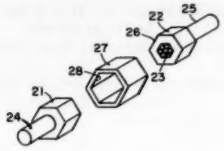
means for illuminating said specimen with light including at least wavelengths of said two specific and different wavelengths.

3,846,010

OPTICAL WAVEGUIDE CONNECTOR

Roy E. Love, Corning, and Rex L. Smith, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed July 5, 1973, Ser. No. 376,577
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 WG **10 Claims**



1. An in-line connector for joining first and second bundles having equal numbers of optical waveguide fibers of substantially equal diameters, said coupler comprising

means forming a first aperture which is adapted to retain the fibers of said first bundle in a close packed array wherein the ends of said first bundle of fibers lie in a first plane that is substantially perpendicular to the axes thereof, the centers of the ends of any three contiguous fibers of said first bundle being disposed at the vertices of an equilateral triangle, said first aperture being adapted to confine the fibers of said first bundle to the smallest possible cross-sectional area in which they can be disposed,

means forming a second aperture which is adapted to retain said second bundle of fibers in a close packed array wherein the ends of said fibers of said second bundle lie in a second plane that is substantially perpendicular to the axes thereof, the cross-sectional shape of said second aperture being a mirror image of that of said first aperture, and

means for aligning said first and second aperture forming means so that the peripheries of said first and second apertures are contiguous.

3,846,011

CHALKBOARD USABLE AS A REAR PROJECTION SCREEN

Edward H. Stein, Wexford, Pa., assignor to Hamilton of Indiana, Inc., Vincennes, Ind.

Continuation of Ser. Nos. 209,387, Dec. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 11,295, Feb. 13, 1970, abandoned. This application June 14, 1973, Ser. No. 370,093
Int. Cl. G03b *21/56*
U.S. Cl. 350—117 **4 Claims**

1. A combination chalkboard-rear projection screen comprising:

a. a glass panel having a ceramic enamel frit coating fused to one side thereof, said coating having a thickness in the range of 0.00060 to 0.00085 inches; said combination chalkboard-rear projection screen having the following surface roughness and optional properties:

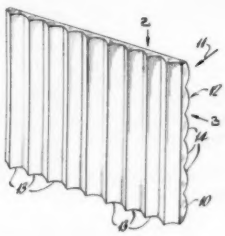
1. a surface roughness of 75 to 95 micro-inches as a center line average index,
2. a gloss as determined by A.S.T.M. D-523-53T of from 3 to 14 units,
3. a total luminous transmittance of at least 39 percent, and
4. a total luminous reflectance of below 20 percent.

3,846,012

TRANSPARENT FRONT PROJECTION SCREEN HAVING CONCAVE RIDGES THEREON

John W. Brown, Flemington, N.J., assignor to Qantix Corporation, Flemington, N.J.

Filed Nov. 14, 1973, Ser. No. 415,686
Int. Cl. G03b *21/60*
U.S. Cl. 350—128 **7 Claims**



1. A front projection screen made from a sheet of light transmitting material having a predetermined critical angle of internal reflection less than 45°, said sheet having a front surface and a back surface; said screen being characterized by:

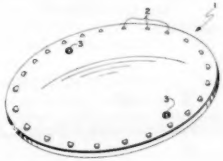
said back surface having formed thereon a plurality of parallel ridges; each of said ridges having curved sides terminating at a peak; said curved sides extending away from said sheet at an angle of approximately 45° immediately adjacent to said sheet; the angle between a line tangent to said sides and said sheet continuously increasing as said curved sides extend towards said peak.

3,846,013

LIGHT-POLARIZING ELEMENT

Fredric S. Cohen, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 249,550, May 2, 1972, abandoned. This application Dec. 7, 1972, Ser. No. 312,909
Int. Cl. G02b *5/30*
U.S. Cl. 350—147 **8 Claims**

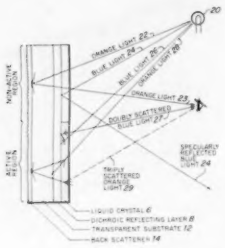


1. A light-polarizing lens element having a first surface, a second surface, and projections from at least one of said surfaces outside the anticipated viewing area of the ultimate composite lens comprising said element, said projection being integral with and formed by deformation of said surface and being capable of maintaining a predetermined distance between the surface of said element from which said projections are raised and a mold element in contact with said raised projections.

3,846,014
LIQUID CRYSTAL DISPLAY CONTAINING AN ADDITIONAL BROAD ANGLE BACK SCATTERING MATERIAL

Ralph E. Aldrich, Acton, Mass., and William A. Simmons, Jr., Nashua, N.H., assignors to Itek Corporation, Lexington, Mass.

Filed July 2, 1973, Ser. No. 375,979
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **9 Claims**



1. A display which is illuminated by an external source of front lighting, comprising:

a. a layer of liquid crystal material which exhibits dynamic scattering upon application of an electric field thereacross, said layer being positioned between a front transparent electrode and a back transparent electrode;

b. means to selectively apply an electric field across discrete areas of said layer of liquid crystal material;

c. a scattering reflector which scatters reflected light over a wide angle, said reflector being positioned behind said back transparent electrode; and,

d. a dichroic reflecting layer positioned between said scattering reflector and said liquid crystal material, said dichroic reflecting layer having the characteristic of reflecting one range of visible wavelengths from said external source of front lighting and transmitting a second range of visible wavelengths from said external source of front lighting.

3,846,015
LIQUID CRYSTAL DISPLAY DEVICE

Manfred Edvin Moi, Kristiansand, Norway, assignor to Norstron Electro-Optic Systems, Ltd., Kristiansand, Norway

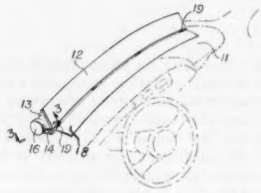
Filed Mar. 6, 1973, Ser. No. 338,517
Claims priority, application Norway, Mar. 7, 1972, 713/72
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **4 Claims**

1. In a liquid crystal display device, comprising a liquid crystal layer enclosed between a pair of parallel transparent plates by means of a seal along the plate edges with the plate surfaces facing the liquid crystal layer being provided with respective electrode configurations in the form of a number of elements electrically connected to external leads for selectively applying an electric voltage so that corresponding parts of the liquid crystal are activated for display of symbols, the seal comprises inner and outer portions which are joined by way of a flexible transition portion and are hermetically secured to the border areas of the respective plates, the size of the respective plates corresponding essentially to the size of the adjacent inner and outer portion of the seal, and at least one transparent plate defines a plurality of holes provided for the external leads which holes are sealed by means of electrically conducting wafers placed between the plates over the respective holes.

3,846,016
PERIPHERAL REAR VIEW MIRRORS FOR AUTOMOBILES

Harold S. Firstenberg, P.O. Box 3132, Redwood City, Calif. 94119

Filed May 1, 1973, Ser. No. 356,156
Int. Cl. G02b *5/08*
U.S. Cl. 350—302 **3 Claims**

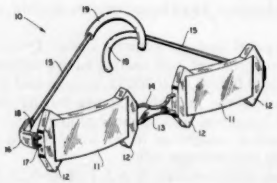


1. A rear-view mirror for vehicles having a ledge extending across the width of the windshield immediately behind the windshield comprising a dashboard mirror having a length approximately the width of said ledge and a relatively short height, mounting means fixed on each end of said dashboard mirror having attachment means for fastening said mounting means to said ledge, each said mounting means having a pivot to permit tilting of said dashboard mirror for adjustment of the line of sight of the driver of the vehicle, a top mirror on the exterior of the vehicle extending substantially across the width of the vehicle, second mounting means fixed to each end of said top mirror to position said mirror forward to the top of the windshield of the vehicle, said second mounting means including pivots to adjust the line of sight of the driver to the dashboard mirror, up through the windshield to the top mirror and thence to the rear and sides of the vehicle, said second mounting means including gripping means engageable with opposed rain gutters on the roof of the vehicle to secure said top mirror to the roof by means of the rain gutters.

3,846,017
EYEGLASSES

Blount Ferrell, Garden City, Utah 84028

Filed June 8, 1973, Ser. No. 368,344
Int. Cl. G02c *5/16, 5/02, 5/22*
U.S. Cl. 351—106 **2 Claims**



1. Eyeglasses comprising, in combination, a pair of substantially rimless lenses of a generally rectangular configuration,

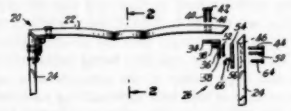
each of said lenses having top, bottom, nasal, and temple edges, a pair of end caps secured to each lens of said pair of lenses, one of said pair of end caps secured on the nasal side of each of said lenses and the other of said pair of end caps secured to the temple side of each of said lenses, each of said end caps having a recessed substantially c-shaped portion for receiving a respective nasal and temporal edge of one of said pair of lenses and extending over a portion of the top and bottom edges of said pair of lenses, wherein the distance between the top and bottom portions of said end caps in an unassembled state is slightly smaller than the top to bottom distance of each of the pair of lenses whereby to hold said lenses within said recessed portion of said end caps in a vise-like manner, a nose bridge connection between the lenses to hold same in spaced apart relationship, said nose bridge connection comprising a nose bridge piece and a brace, each of which extends into the two nasal oriented caps, a pair of L-shaped connecting members, each one of said L-shaped members secured to a respective temple end cap, a pair of flexible tubular hinge members, each one of said hinge members secured to a respective one of said L-shaped members and a pair of temple members, each one of said temple members secured to a respective one of said tubular hinge members, said flexible tube member and the connections between said temple members and said flexible tubular hinge members being such as to allow adjustment of the length of said temple members with relative ease.

3,846,018

EYEGLASSES WITH SELECTIVELY TILTABLE FRAMES

Lawrence Gordon Gerson, 410 W. 24th St., New York, N.Y.

Filed June 14, 1973, Ser. No. 369,996
Int. Cl. G02c *5/14, 5/22*
U.S. Cl. 351—120 **4 Claims**



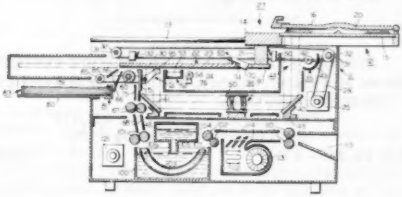
1. Eyeglasses comprising, in combination, a frame front, a pair of temple bars and a pair of user adjustable hinge units for hingedly connecting said temple bars with the opposite ends of said frame front, to enable tilting movement of said frame front relative said temple bars and for enabling folding of said temple bars against said frame front, each of said user adjustable hinge units comprising, in turn, a first and second hinge leaf, means joining said hinge leaves of each said pair for pivotal movement about a hinge axis, means for fixedly securing each of said first hinge leaves with opposite end portions of said frame front with said hinge axes generally parallel to one another and perpendicular to the longitudinal axis of said frame front, means for movably securing each of said second hinge leaves with an end portion of one of said temple bars with said hinge axes generally perpendicular to the longitudinal axis of said temple bar and enabling pivotal movement thereof about a pivotal axis generally perpendicular to the axes of said temple bar and resilient holding means operative between each of said second of said hinge leaves and the respective one of said temple bars for self-supportingly holding said second of said hinge leaves against inadvertant or unintentional pivotal movement about said pivotal axis while enabling user adjustement of the angular orientation of said frame front relative to said temple bars so that such user may adjust such frame front for viewing through different lens portions, to maintain said frame front generally parallel to a viewed plane, for reducing distortion for tilting the lower rim of said frame front from the optical path, for enabling the temple bars to lie adjacent the frame front when folded, wherein said pivotal means comprises a pin member extending through aligned apertures extending through said temple bar and said other of said hinge leaves together with means to positively define at least two angular positions of said frame front relative said temple bars, wherein said defining means comprises a pin-like projection extending generally perpendicular to each of said temple bars in generally parallel relationship and a generally arcuate slot in each of said second of said hinge leaves about said pin-members, said pin-like projection extending into said slot to limit the pivotal movement about said pin-member, and wherein said resilient holding means comprises bowed leaf spring acting between each of said second of said hinge leaves and the associated one of said temple bars.

3,846,019

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Isao Yamaguchi, Moriguchi, and Hitoshi Katayama, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sept. 24, 1971, Ser. No. 183,479
Claims priority, application Japan, Sept. 26, 1970, 45-84225
Int. Cl. G03g *15/00, 15/18*
U.S. Cl. 355—3 R **9 Claims**



1. A copying apparatus for producing a visible image of an original on a copy sheet which has a conductive base and a dielectric surface, said apparatus comprising:

a. a housing;

b. first means structurally associated with said housing and including a mounting table which has a flat mounting surface for supporting the original in a flat condition and a photoconductive plate which has a conductive backing plate and a photoconductive surface, and which is secured to said mounting table with said photoconductive surface parallel with said mounting surface;

c. charging means in said housing adjacent said photoconductive plate, said photoconductive plate and said charging means being movable relative to each other, said charging means imposing a uniform electrostatic charge on said photoconductive surface during the relative movement of said photoconductive plate, and said charging means;

d. an optical assembly between said mounting table and said photoconductive plate for forming an electrostatic latent image of said original on said photoconductive surface after said photoconductive surface is electrostatically charged, said optical assembly being composed of illumination means for illuminating said original on said mounting surface, a lens unit and mirrors for focusing a mirror image of the illuminated original upon said photoconductive surface, an illuminated original upon said photoconductive surface, and an elongated slit defining a path of reflected light from the mounting table to the lens unit and from the lens unit to the photoconductive surface for projection of a partial image of said original onto said photoconductive surface, one of said first means and said optical assembly being movable relative to the other in a direction parallel with the mounting surface;

e. drive means coupled to the movable one of said first means and said optical assembly for moving said movable one in a first direction, and sequentially in a second direction opposite to said first direction so that said optical assembly scans said original and continuously projects a partial image of said original onto said photoconductive surface during said relative movement in the first direction;

f. control means coupled to said drive means for controlling said drive means;

g. sheet feed means adjacent said photoconductive plate copy sheets one by one from a source of copy sheets with the dielectric surface of each copy sheet facing said photoconductive surface having the electrostatic latent image formed thereon;

h. charge transfer means adjacent said photoconductive plate for transferring said latent image from said photoconductive surface to said dielectric surface and including means for pressing said dielectric surface against said photoconductive surface and means for separating said copy sheet from said photoconductive plate;

i. guide means adjacent said charge transfer means for receiving and guiding said copy sheet in a predetermined path after said copy sheet is separated from said photoconductive surface; and

j. developing means adjacent said guide means for converting said electrostatic latent image on said dielectric surface to a visible image.

3,846,020

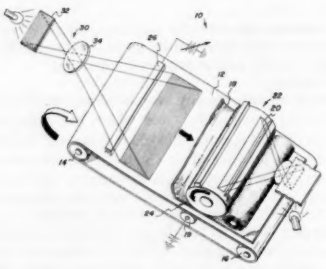
ELECTROSTATIC SHEET TRANSPORT SYSTEM

Gerald M. Fletcher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1973, Ser. No. 421,179

Int. Cl. B65h *17/28*; **G03g** *15/00*

U.S. Cl. 355—3 R **6 Claims**



1. In an electrostatographic copying system in which an image is formed on an imaging surface and transferred at a transfer station to a copy sheet, the improvement comprising:

copy sheet transport means including a copy sheet supporting surface,

said supporting surface being photoconductively electrically dischargable;

support means for said transport means for moving said supporting surface intimately past said imaging surface;

charging means for electrically charging said supporting surface, and

optical means for optically imaging a fine light pattern of closely alternating adjacent light and dark areas on said supporting surface, subsequent to said electrical charging thereof by said charging means, for photoconductively discharging said supporting surface into a fine charge pattern of alternating closely adjacent charged and discharged areas on said supporting surface providing copy sheet retaining electrical fringe fields.

3,846,021

REPRODUCTION APPARATUS USING AN ENDLESS IMAGE-BEARING BELT

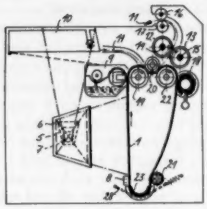
Mathias J. J. M. Vola, Sittard, Netherlands, assignor to Oce'-van der Grinten, N.V., Venlo, Netherlands

Continuation-in-part of Ser. No. 298,783, Oct. 18, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,052

Claims priority, application Netherlands, Oct. 26, 1971, 7114725

Int. Cl. G03g *15/22*

U.S. Cl. 355—16 **19 Claims**



1. In reproduction apparatus including an endless belt, means positioning said belt for movement thereof through a processing path and thence through a region for return to said path and means respectively for forming an image on and transferring the image from a portion of the belt in said path, the combination which comprises means for driving the belt engaging said belt at a location downstream from said path between said path and said return region, a slide surface engaged by said belt at a location upstream from said path and over which the belt slides as it is moved by said driving means, means for pressing said belt against said slide surface with a force whereby tension is created in the length of the belt extending between said surface and said driving means so as to hold the belt taut in said path, the portion of the belt in said return region being longer than the shortest distance provided for belt travel therein and thus being substantially tensionless therein, and edge guides at the opposite side edges of a tensionless portion of said belt approaching said slide surface for guiding the belt constantly over a selected portion of said surface.

3,846,022

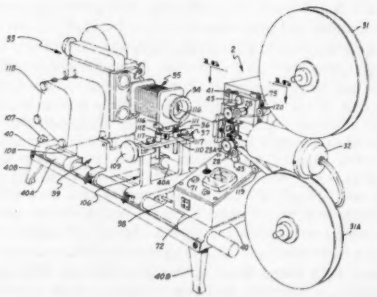
OPTICAL PRINTER

Jaakko Kurhi, 3908 High St., Oakland, Calif. 94619

Continuation-in-part of Ser. No. 285,372, Aug. 31, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 337,889

Int. Cl. G03b *27/42*

U.S. Cl. 355—53 **11 Claims**



1. An optical printer for printing from a length of film having individual picture frames thereon and formed with a

plurality of registration openings formed longitudinally along one edge comprising:

a. a projection module member;

b. a first sprocket mounted for rotation on said module member having circumferential pins for registration with said registration openings;

c. a second sprocket mounted for rotation on said module member having circumferential pins for registration with said registration openings and being laterally spaced from said first sprocket;

d. a step motor operably connected to said first and second sprockets for conjoint intermittent rotation of said sprockets;

e. a pair of laterally spaced registration pins operably connected to said motor and mounted between said sprockets on said projection module and mounted for intermittent movement into and out of the registration openings in said film, said pins being inserted through said openings when said film is motionless and retracted therefrom when said film is being moved by said sprockets; and

f. first and second tension pins mounted on said projection module operably connected to said motor and mounted respectively between said registration pins and said sprockets and mounted for movement against said film to tension said film when it is moving and for movement out of tensioning contact with said film when said film is at rest to permit some movement of said film by said registration pins when they are inserted into said registration openings.

3,846,023

RANGE RETICLE IN A NIGHT VISION DEVICE

Michael J. Wilkin, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 5, 1973, Ser. No. 337,795

Int. Cl. G01c *3/00, 3/16*

U.S. Cl. 356—21 **6 Claims**

1. A ranging system for maintaining the spacing between helicopters, comprising:

means associated with one of said helicopters for providing a rotatable incandescent lamp means positioned on the rotor tips of said helicopters for generating a circular light pattern thus providing an invariant diametric dimension from any viewing angle at a fixed distance therefrom; and optical means for viewing said pattern from a second helicopter, said optical means having reticle markings spaced apart a distance corresponding to said invariant dimension viewed at a predetermined distance, whereby, said spacing between helicopters is maintained when the invariant dimension matches the spacing of the reticle markings.

3,846,024

OPTICAL ALIGNMENT SYSTEM FOR OPTICAL SPECTROMETERS

Arthur Turner, Carlisle, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.

Continuation of Ser. No. 262,090, June 12, 1972, abandoned. This application Feb. 14, 1974, Ser. No. 442,361

Int. Cl. G01j *3/02, 3/18*

U.S. Cl. 356—80 **12 Claims**

1. A spectroscopic apparatus comprising:

a. first means for exciting a chemical sample to emit characteristic radiation;

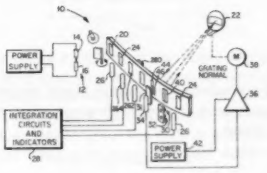
b. second means for directing said characteristic radiation along a first optical path;

c. third means for diffracting said characteristic radiation from said first optical path into a spectrum;

d. fourth means for reading said spectrum;

e. a pair of solid state light sources mounted on a circuit board, said solid state light sources spatially separated with respect to each other, said solid state light sources having alternatively bright regions when subjected to an alternating voltage for emitting monitor radiation, said solid state light sources energized sequentially on alternate half cycles of said alternating voltage;

f. an entrance slit in registration with said pair of light sources for directing said monitor radiation from each said source along a second optical path toward said third means, said monitor radiation diffracted at angles falling



outside the spectral range normally utilized by the spectroscopic apparatus;

g. an offset exit slit for said monitor radiation diffracted by said third means;

h. photo detector means in registration with said exit slit for receiving said monitor radiation from said exit slit in order to produce signals of a character that depends upon the orientation of said third means with respect to said entrance and exit slits;

i. filter means interposed between said exit slit and photo detector means for optically separating said diffracted characteristic radiation from said monitor radiation; and

j. fifth means responsive to said signals produced by said photo detector means for controlling the relative orientations of said third means with respect to said entrance and exit slits.

3,846,025

FREQUENCY SENSITIVE LASER ROTARY MOTION SENSOR

Scott A. Wilber, 1512 Garfield Ave., Apt. 1, Louisville, Colo. 80027

Filed Apr. 2, 1973, Ser. No. 346,985

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 LR **6 Claims**

1. A rotary motion sensor comprising the combination of:

a closed polygonal optical loop;

reference optical beam generating means;

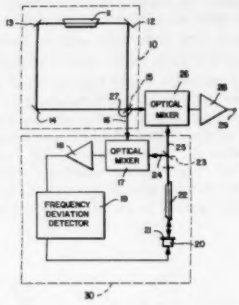
means for stimulating and maintaining bimodal coherent radiation circulating in said loop;

means for coupling radiation in one mode only from said loop to said reference beam generating means;

means responsive to the radiation coupled out of said loop for controlling the reference beam frequency at a frequency which differs from said one mode by a constant amount;

means for coupling radiation in said other mode out of said loop;

means for comparing the characteristics of the reference beam and said other mode beam; and



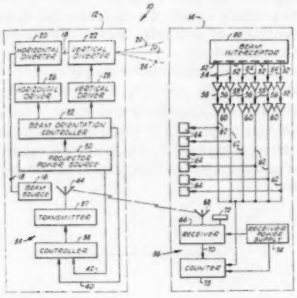
means for producing an output signal proportional to the difference between said reference beam and said other mode beam.

3,846,026

ROTATING BEAM SURVEYING METHOD AND APPARATUS

Kenneth H. Waters, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 1, 1971, Ser. No. 194,397
Int. Cl. G01b *11/26;* **G01c** *3/08*
U.S. Cl. 356—152 **19 Claims**



1. A surveying apparatus comprising:

beam projector means for generating an energy beam and projecting the energy beam therefrom, comprising:

beam source means generating the energy beam;

a horizontal diverter rotating the energy beam in a horizontal datum plane in a driven position thereof;

a horizontal driver connected to the horizontal diverter driving the horizontal diverter rotating the energy beam in a horizontal datum plane;

a vertical diverter connected to a portion of the horizontal diverter and rotated in a rotated position of the horizontal diverter, the vertical diverter diverting the energy beam to predetermined angular positions in a vertical datum plane in a driven position thereof; and

a vertical driver connected to the vertical diverter driving the vertical diverter positioning the energy beam in controlled, predetermined angular positions in a vertical datum plane during the rotation of the energy beam in a horizontal datum plane;

beam receiver means intercepting the projected energy beam in one angular position thereof in a horizontal and a vertical datum plane and providing an output signal responsive to the intercepted, projected energy beam; and

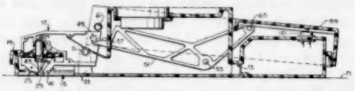
means receiving the output signal responsive to the intercepted, projected energy beam and identifying the angular position of the intercepted, projected energy beam in a horizontal and a vertical datum plane.

3,846,027

REFLECTION DENSITOMETER

Maxwell Hyman, El Toro, and Donald C. De Puy, Orange, both of Calif., assignors to Align-O-Tron Corporation, Orange, Calif.

Filed Aug. 3, 1972, Ser. No. 277,491
Int. Cl. G01j *3/48;* **G01n** *21/48*
U.S. Cl. 356—188 **17 Claims**



1. An instrument for providing an indication of the intensity of the light reflected from a test region, comprising:

a supporting structure;

a target carried by the supporting structure, said target having a preselected location which is adapted to be placed over said test region, said preselected location of said target being capable of passing light;

a head including means for providing a beam of light and means for transmitting reflected light;

means for mounting said head on said supporting structure for movement between a retracted position in which said head leaves said preselected location uncovered whereby said preselected location of said target can be placed over said test region and an operative position in which said head overlies said preselected location so that it can direct said beam of light therethrough and said light transmitting means communicates with said preselected location of said target to receive and transmit light reflected from said test region; and

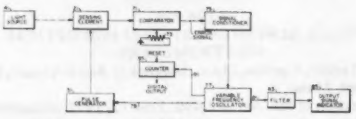
means responsive to a characteristic of the light reflected into said light transmitting means for providing an indication of the intensity of the light reflected from the test region.

3,846,028

ENERGY CONVERSION APPARATUS

William F. List, Linthicum, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,488
Int. Cl. G01j *1/42*
U.S. Cl. 356—218 **7 Claims**



1. Light measuring apparatus including at least one transistor having an emitter, a collector and a base, means for subjecting the surface of said transistor to light from a region,

means connected to said emitter and collector for impressing in circuit with said emitter and collector a periodic electrical potential, means responsive to the magnitude of the current transmitted by said collector and emitter as a result of said potential while said transistor is subject to said light, for varying the periodicity of said potential, and means for deriving a measurement of light intensity impinging on the surface of said transistor from said varied periodicity.

3,846,029

DISPENSER ASSEMBLY FOR WAX SUBSTANCES

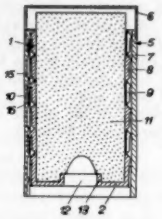
Edgar Benn, Altstatten; Benno Buchel, Widnau, and Manfred Ender, Wolfhalden, all of Switzerland, assignors to Briag AG, Altstatten, Germany

Filed July 26, 1973, Ser. No. 383,301

Claims priority, application Switzerland, Aug. 10, 1972, 11873/72

Int. Cl. B65d *35/42*

U.S. Cl. 401—96 **7 Claims**



1. A dispenser assembly particularly suitable for packaging wax substances and for dispensing such substances in discrete quantities, said assembly comprising, in combination, an inner generally cylindrical sleeve having said substance contained therein, said inner sleeve including at one end thereof a bottom wall and means extending through said bottom wall to define a filling aperture directed interiorly of said inner sleeve through which said wax substance in a liquid state may be introduced into said inner sleeve, a removable cover member tightly closing the end of said inner sleeve opposite said bottom wall, an outer generally cylindrical sleeve surrounding said inner sleeve with said inner sleeve being axially removable therefrom, said inner sleeve being formed with a first plurality of severable joints extending circumferentially about said inner sleeve and spaced axially therealong to define therebetween annular sleeve sections, said second plurality of severable joints extending axially between a pair of said first plurality of severable joints across said inner sleeve sections, tab means affixed to each of said annular sections at a location immediately adjacent to each of said second plurality of severable joints to enable severance of said annular sections individually from said inner sleeve, and detent means interposed between said inner and outer sleeves to prevent reinsertion of said inner sleeve within said outer sleeve.

3,846,030

POST

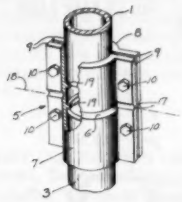
Herbert L. Katt, 4107 Pennington Ln., Racine, Wis. 53403

Filed Aug. 10, 1972, Ser. No. 279,296

Int. Cl. F16b *7/00*

U.S. Cl. 403—2 **1 Claim**

1. A post for highway signs and the like comprising two aligned post sections, one adapted to extend downwardly into the ground and the other adapted to extend upwardly to support a sign or other object, a two piece clamp of complementary flanged U-shaped members bridging the parting line between the two post sections and enveloping the adjacent ends of the sections to secure the same together with said clamp constituting the sole support for said upper post section upon said lower post section, and bolts extending through the flanges to secure the clamp members together and upon the post sections, characterized by a portion of reduced cross-sections on each clamp member in the general plane of the parting line between the post sections to provide a preferential



breakage of the clamp members in the event of a severe impact upon the upper post, and spaced shoulder means integral with and projecting internally of at least one of the clamp members above and below said weakened portion of the clamp members serving to space the ends of said post sections and to center the same with respect to said weakend clamp portion.

3,846,031

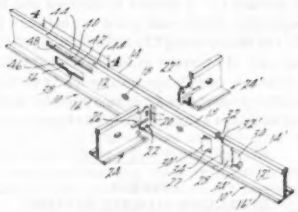
CEILING GRID SYSTEM EXPANSION JOINT

George C. Adams, Ann Arbor, Mich., assignor to Rollform Incorporated, Ann Arbor, Mich.

Filed Apr. 4, 1972, Ser. No. 240,921

Int. Cl. E04c *2/42*; **E04b** *5/52*

U.S. Cl. 403—28 **12 Claims**



1. A controlled expansion beam for use in a ceiling grid system comprising:

a longitudinally elongated web having a lower flange adapted to support the marginal edge portion of a ceiling panel and an upper continuous bulb portion; and

means formed in said web intermediate the ends of said beam providing a controlled localized expansion relief section for said beam, said means including upper and lower longitudinally elongated apertures formed solely in said web one above the other and disposed in spaced relationship between said flange and said bulb portion, said apertures defining longitudinally extending upper and lower continuous marginal strips in the web along and adjacent to said bulb portion and said flange, said marginal strip located adjacent to said flange being of substantially uniform width and provided intermediate the ends thereof with only a single medianly disposed notch means which extends downwardly from said lower aperture and terminates short of said flange for controlled downward buckling of said flange in response to longitudinal compressive forces applied to said beam.

3,846,032

BALL JOINT DEVICE

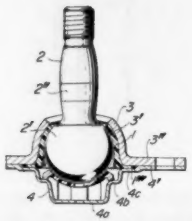
Isao Harada, Hekinan, and Fumitaka Ryuka, Nishio, both of Japan, assignors to Hojitsu Kogyo Co., Ltd., Nishio-shi, Japan

Filed June 8, 1973, Ser. No. 368,459

Claims priority, application Japan, June 17, 1972, 47-72028; June 17, 1972, 47-72029

Int. Cl. F16c 11/06

U.S. Cl. 403—140 4 Claims



1. A ball joint device comprising a substantially semispherical hollow ball joint seat (1) having a flange portion (1''') extending radially outwardly from the outer periphery of a lower end opening (1*b*) thereof, a ballheaded stud (2) received at its ball-shaped head portion (2') in said ball joint seat (1), a housing (3) having a flange portion (3''), and a cap (4) having a stepped rim portion (4*c*) terminating in a flange portion (4'), said stepped rim portion (4*c*) being disposed adjacent to said flange portion (3'') of said housing (3) to define a space (a) therebetween, said space (a) being of slightly less thickness than that of flange portion (1''') of said ball joint seat (1), said ball joint seat (1) being disposed between said housing (3) and said cap (4) in such a manner that said flange portion (1''') thereof is received and firmly held under compression within said space (a) between said flange portion (3'') of said housing (3) and said stepped rim portion (4*c*) of said cap (4) thereby ensuring intimate gas-tight engagement between said flange portion (3'') of said housing (3) and said flange portion (4') of said cap (4), and means for holding said housing (3) and said cap (4) together in compression.

3,846,033

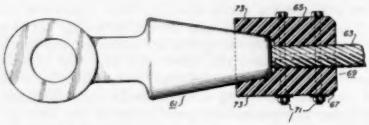
VIBRATION DAMPED FITTING

Carl W. Smollinger, Williamsport, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 889,381, Dec. 31, 1969, Pat. No. 3,705,445. This application Sept. 12, 1972, Ser. No. 288,474

Int. Cl. F16b 7/00

U.S. Cl. 403—220 1 Claim



1. A vibration damping arrangement for wire cable to damp destructive vibrations in the cable, which vibrations are mechanically induced by shocks and changing tensions in the cable, as the vibrations approach an end fitting on the cable comprising:

a. a metallic end fitting secured to the end of said wire cable, said end fitting having an exteriorly tapered section in which the cable is secured and an attachment section with means to attach the fitting to external structures, the said exteriorly tapered section of said fitting having a decreasing taper, i.e. a decreasing cross sectional area, extending from the attachment section of the fitting to substantially the area of first contact of the fitting with the cable,

b. an elongated plastic-damper body preformed in separate sections, said elongated damper body having an internal tapered opening having substantially the same internal dimensions, shape and contour as the external dimensions, shape and contour of the tapered section of the end fitting, said plastic damper body being mounted over at least a portion of the tapered end of the said end fitting with the interior tapered surfaces of said damper body in substantial contact with the exterior surface of the tapered end section of said end fitting,

c. the plastic damper body having an orifice extending longitudinally therethrough, the interior surfaces of said orifice being in intimate surface contact with the outer surfaces of the outer wires of the wire cable, adjacent to the smaller end of the tapered portions of the end fitting,

d. mechanical compression means to firmly secure the plastic damper body sections about the end of said end fitting and said cable, and

e. wherein the plastic of the plastic damper body has a Durometer A hardness of 90 to 95.

3,846,034

SYSTEM FOR SECURING A BEARING ABOUT A SHAFT

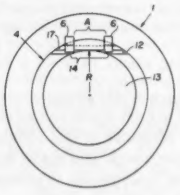
Leonhard Halliger, and Horst Schroder, both of Schweinfurt, Germany, assignors to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed Oct. 3, 1973, Ser. No. 403,331

Claims priority, application Germany, Oct. 12, 1972, 2249906

Int. Cl. F16c 35/06

U.S. Cl. 403—351 8 Claims



1. A system for securing the inner ring of an anti-friction bearing or the like on a shaft comprising, a groove on the outer surface of said inner ring adjacent one end thereof and a slit on the inner surface of said inner ring in opposition to said groove, said slit extending axially from the end of said inner ring and tangentially to the radius of the inner ring and shaft so as to intersect said shaft, and a clip having one end radially engaged in said groove and the other end extending axially within said slit, said clip being slidable within said groove and slit to removably wedge between said inner ring and said shaft.

3,846,035
REFERENCE BEAM GRADE CONTROL FOR ASPHALT PAVERS

Donald R. Davin, Shelbyville, Ill., assignor to Blaw-Knox Construction Equipment, Inc., Mattoon, Ill.

Filed Mar. 26, 1973, Ser. No. 345,115
Int. Cl. E01c *19/00*
U.S. Cl. 404—84 **17 Claims**

1. A dual reference beam grade control system for use in combination with an asphalt paver of the type having a transversely disposed material distributing auger, a floating screed positioned behind the auger, tow arms extending forwardly from the screed and connected to the paver frame, and tow arm suspension means for vertically adjusting the tow point connections of said tow arms to effect changes in the attitude angle of the screed, said grade control system comprising

a. a beam-like first reference member towed by the paver frame and extending longitudinally along one side thereof,

b. said first reference member being disposed entirely forward of the auger,

c. a plurality of independently movable supports for said first reference member spaced along its length and supporting said reference member at an averaged position above a base grade surface,

d. a first reference arm pivotally connected to the first reference member in its central region and extending rearwardly toward and being pivotally connected to one tow arm,

e. a second reference member towed by the paver frame and being disposed entirely behind the screed,

f. support means for supporting said second reference member above an asphalt mat grade surface,

g. a second reference arm connected to the second reference member and extending forwardly toward and being pivotally connected to said one tow arm and/or said first reference arm, and

h. tow arm height reference control means associated with each of said reference arms and operatively associated with said tow arm suspension means for raising and lowering the tow point of said one tow arm relative to the paver frame in response to relative movements of one or both of said reference arms in relation to said one tow arm.

3,846,036
APPARATUS AND METHOD FOR STRIATING CONCRETE

Billy Z. Baker, Abilene, Tex., assignor to Roberts Supply, Inc., Abilene, Tex.

Filed Apr. 11, 1973, Ser. No. 349,935
Int. Cl. E01c *7/35*
U.S. Cl. 404—75 **10 Claims**

1. Apparatus for striating freshly placed concrete comprising:

an elongated head having a bristle holding slot therein extending lengthwise of said head;

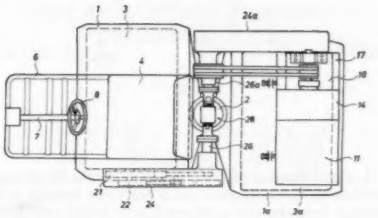
and a single course of bristles having their ends fixed in side-by-side abutting relationship in said slot,

said bristles having diameters approximately twice the depth of the striations desired to be formed in the concrete, of a length sufficient to present a substantial surface to the concrete when said head is held at an acute angle to said concrete, said bristles protruding from said head a distance such that their ends establish a substantially straight line, but with the protrusion distance varying between adjacent bristles from about one-fourth to about one-eighth inch.

3,846,037
VIBRATORY COMPACTION VEHICLE

Joachim Mozdzanowski, Denkendorf, Germany, assignor to Deimag Maschinenfabrik, Rheinhold Dornfeld, Esslingen am Neckar, Germany

Filed Jan. 24, 1973, Ser. No. 326,234
Claims priority, application Germany, Jan. 27, 1972, 2203785
Int. Cl. E01c *19/38*
U.S. Cl. 404—117 **10 Claims**



1. A vibratory compaction vehicle comprising:

a first frame part;

a second frame part;

joint means coupling said first and second frame parts together for pivotal movement about a vertical axis;

a first ground contacting member rotatably coupled to said first frame part about a first horizontal axis;

a second ground contacting member rotatably coupled to said second frame part about a second horizontal axis;

a first gear train coupled to said first frame part and extending, on a first side of the vehicle, from a position above said joint means to a position adjacent said first axis;

a second gear train coupled to said second frame part and extending, on a second side of the vehicle, from a position above said joint means to a position adjacent said second axis;

first eccentric weight means, coupled to said first member and said first gear train, for providing vibration to said first member when said first eccentric weight means is rotated;

second eccentric weight means, coupled to said second member and second gear train, for providing vibration to said second member when said second eccentric weight means is rotated;

said first and second eccentric weight means being 180° out of phase relative to each other;

cardan shaft means, located directly above said joint means, rotatably coupled to one of said frame parts, and coupled to said first and second gear trains, for transmitting rotation provided thereto to said first and second gear trains to thereby rotate said first and second eccentric weight means synchronously;

power means, located on one of said frame parts, for providing rotation to said cardan shaft means; and

means coupled to one of said frame parts for rotating said first and second ground contacting members.

3,846,038

FIXED BLADING OF AXIAL COMPRESSORS

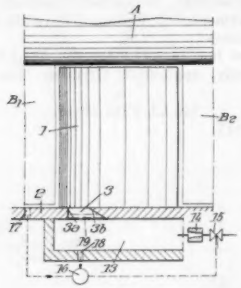
Pierre P. Carriere, Paris; Jacky R. Leynaert, Igny; Georges D. Meauze, Paris, and Jean-Jacques Thibert, Verrieres-le-Buisson, all of France, assignors to Office National D'Etudes et de Recherches Aerospatiales (par abreviation : O.N.E.R.A.) France

Filed Dec. 14, 1972, Ser. No. 314,965

Claims priority, application France, Dec. 27, 1971, 71.46854

Int. Cl. F04d *29/68, 27/02*

U.S. Cl. 415—1 **17 Claims**



1. Fixed blading for an axial compressor constituted by a succession of blades fixed on at least one annular wall, each passage between two adjacent blades being provided with a suction opening, suction means associated with said suction opening for aspiring fluid through the suction opening, said suction means including means for maintaining the pressure in the suction opening substantially equal to the flow static pressure in the said passage.

3,846,039

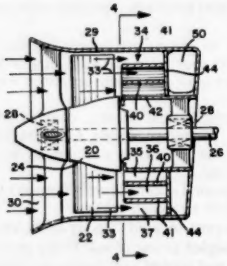
AXIAL FLOW COMPRESSOR

Edward A. Stalker, Bay City, Mich., assignor to The Stalker Corporation, Essexville, Mich.

Filed Oct. 23, 1973, Ser. No. 408,476

Int. Cl. F01d *9/00;* **F03b** *3/16*

U.S. Cl. 415—206 **7 Claims**



1. In an axial flow compressor having a bladed rotor, the improvement comprising an annular compartment positioned in downstream relation to the rotor and adapted to receive the flow from the compressor blades, said compartment being defined by a back wall and axial wall means extending from said back wall toward the compressor blades dividing said compartment effectively into a plurality of radially spaced subcompartments, a collector positioned, axially downstream from said compartment, said compartment back wall forming a partition between said compartment and said collector, and means in said back wall defining a plurality of angularaly spaced inlets leading from said compartment into said collector, said inlets being inclined to direct the flow from said compartment into the collector substantially along the surface of said back wall.

3,846,040

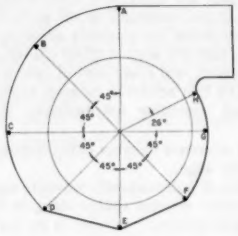
BLOWER HOUSING

Donald I. Dennis, Rt. 2, Jacksonville, Tex. 75766

Filed June 16, 1972, Ser. No. 263,714

Int. Cl. F04d *29/42*

U.S. Cl. 415—219 C **4 Claims**



1. Housing apparatus for a blower wheel having a radial periphery generally defining a curved scroll expanding at a linear expansion angle from the cut-off and having a first flat wall segment within the first 200° from the cut-off and a second flat wall segment adjacent said first flat wall segment.

3,846,041

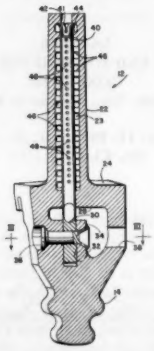
IMPINGEMENT COOLED TURBINE BLADES AND METHOD OF MAKING SAME

Peter E. Albani, Hamden, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 31, 1972, Ser. No. 302,421

Int. Cl. F01d *5/18*

U.S. Cl. 416—97 **7 Claims**



1. A turbine blade comprising:
an integral airfoil and tang at the inner end thereof,

said airfoil having thin walls defining a chamber extending from its tip end to said inner end,

an insert disposed in said chamber in spaced relation to the walls thereof and extending into said tang, said insert forming a plenum sealed from the airfoil chamber and having a substantial thickness in the innermost end thereof,

said tang having a passageway from one exterior end face thereof through its upper portion to the insert, said insert having an opening registered with said passageway,

a pin extending through said tang and the inner end of said insert in a direction generally normal to the side faces of the tang for mechanically locking the inner end of said insert to said tang,

said insert having a plurality of orifices directed toward the chamber wall for impingement thereof of cooling air from said plenum, and

means for discharging cooling air from said chamber.

3,846,042

PEDESTAL MOUNTED WIND GENERATOR

Charles I. Keene, Fontana, Calif., assignor to Herman P. Smith, Holtville, Calif.

Filed Sept. 7, 1973, Ser. No. 394,966
Int. Cl. B64c *27/12*
U.S. Cl. 416—110 **5 Claims**

1. A wind generator for generating a flow of air in and about crops, said wind generator comprising in combination:

a. a hollow vertically aligned pedestal mounted upon the ground, said pedestal including a sealed lower compartment and a sealed upper compartment;

b. a support assembly rotatably mounted on top of said pedestal;

c. a platform mounted on said support assembly, said platform being non-perpendicularly oriented with the vertical axis of said pedestal;

d. a shaft carrying a fan, said shaft being journaled on said platform parallel to said platform, whereby the flow of air induced by said fan will be essentially aligned with said platform;

e. motive means disposed within said upper compartment for producing power to rotate said fan, said motive means including:

1. a mounting plate for securing said motive means within said upper compartment;

2. a vertically oriented output shaft parallel to the axis of said pedestal; and

3. control means for regulating the operation of said motive means in response to the output of a ground based control unit;

f. a power train disposed intermediate said motive means and said fan, said power train including:

1. a gear box mounted on said platform and having an input shaft extending downwardly perpendicular to said platform and at least one output shaft, each said output shaft being parallel to said platform;

2. a drive shaft intermediate said output shaft of said motive means and said input shaft of said gear box, said drive shaft including universal joints to accommodate the misalignment between said output shaft of said motive means and said input shaft of said gear box;

3. a flexible coupling interconnecting said shaft of said fan and one of said output shafts of said gear box to accommodate inadvertent misalignment therebetween;

g. a housing secured to said platform for protecting said gear box and said shaft of said fan; and

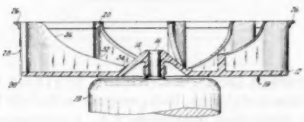
h. control means for rotating said support assembly as a function of the rate of rotation of said drive shaft; whereby, energization of said motive means actuates said fan to produce a flow of air in alignment with said platform and toward the ground to destratify the air around said pedestal while said platform rotates about the axis of said pedestal.

3,846,043

BLOWER WHEEL

David W. Wolbrink, and Robert W. Busch, both of Hartford, Wis., assignors to Broan Manufacturing Co., Inc., Hartford, Wis.

Filed Mar. 12, 1973, Ser. No. 339,629
Int. Cl. F01d *5/04*
U.S. Cl. 416—183 **5 Claims**



1. A motor driven, rotary blower wheel comprising:

a flat circular base lying in a plane perpendicular to the axis of rotation and to a stream of inlet air;

a plurality of uniformly spaced fan blades mounted on the perimeter of said base normal to its plane, said fan blades being forward curved with respect to the direction of rotation of said blower wheel for exhausting a peripheral stream of outlet air;

a conical hub mounted in the center of said base, said hub being of a size sufficient to form, with said base, a means for diverting the stream of air through the blower wheel; and

a plurality of backward curved feeder vanes mounted on said base normal to its plane, said vanes extending between said hub and said blades along portions of non-diametrical chords of said base and having ends joined to said hub in a generally tangential manner, said vanes further having ramplike inner portions for providing an initial spin to the air stream while avoiding torque loading of the motor and flaring portions joining said blades.

3,846,044

TURBOMACHINE ASSEMBLY

Wayne C. Shank, Tucson, Ark., assignor to Avco Corporation, Williamsport, Pa.

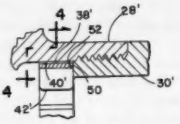
Filed Sept. 14, 1973, Ser. No. 397,319
Int. Cl. F01d *5/06*
U.S. Cl. 416—199 **5 Claims**

1. A turbomachine rotor assembly comprising:

first and second bladed rotor elements;

an outer sleeve coaxial with and extending from one of said rotor elements;

an inner sleeve coaxial with the other of said rotor elements and received in said outer sleeve, said inner and outer sleeves having concentric pilot surfaces for maintaining the sleeves coaxial with respect to one another, a suitable fit being maintained between said pilot surfaces to permit ease of assembly and disassembly of said sleeves;



means for axially securing said sleeves relative to one another; and

an integral flange at the end of said inner sleeve, said flange extending from the inner periphery of said sleeve, said flange having a plurality of radial notches extending from the inner diameter of said flange to provide flexibility in the pilot surface of said inner sleeve, thereby permitting it to expand radially outward in response to centrifugal force acting on the flange for maintaining the inner and outer sleeves coaxial.

3,846,045

PUMP IMPELLERS FOR COOLING SYSTEMS OF I.C.E.

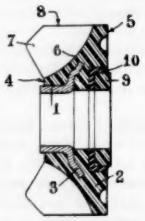
Antonio Mincuzzi, Milan, Italy, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg, Luxembourg

Filed Apr. 9, 1973, Ser. No. 349,029

Claims priority, application France, Apr. 17, 1972, 72.13408

Int. Cl. F04d *7/02*

U.S. Cl. 416—230 **5 Claims**



1. Pump impeller for cooling systems of internal combustion engines, comprising a metal hub adapted to be force fitted to an engine shaft and having an outflaring portion at its outer end, a sleeve molded from thermosetting resin having a low hot-water absorption coefficient and a thickness increasing from its inner face to its outer face anchored to the outflaring hub portion, a rubber ring fitted into the rear face of said sleeve, a packing ring securing said rubber ring to the rear face of said sleeve, and impeller blades having their outer edges inscribed in a cylinder concentric to the impeller axis and formed integrally with said sleeve.

3,846,046

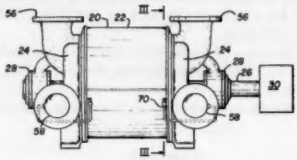
LIQUID RING PUMP LOBE PURGE

Kenneth W. Roe, Winfield, Ill.; Ernest E. Studwell, E. Norwalk, and Robert E. Cooke, W. Redding, both of Conn., assignors to Nash Engineering Company, Norwalk, Conn.

Continuation of Ser. No. 120,421, March 3, 1971, abandoned. This application Jan. 8, 1973, Ser. No. 321,602

Int. Cl. F04c *19/00*

U.S. Cl. 417—54 **8 Claims**



1. A method of reducing wear in liquid ring pumps which would result from abrasive action of contaminants carried in the liquid of the ring which method comprises forming conduit means opening to the interior of the ring chamber at a region where, but for that opening, excessive wear would occur and during operation of the pump purging a portion of the ring liquid and a substantial part of the contaminants of the ring through said conduit means.

3,846,047

FOLDABLE HAIR DRYER

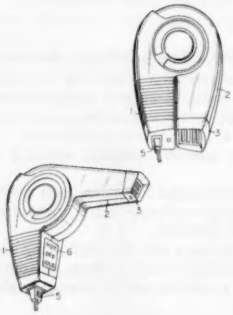
Yukio Wada, Hikone, and Hideo Okutu, Yokaichi, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 28, 1973, Ser. No. 336,498

Claims priority, application Japan, Feb. 28, 1972, 47-24482; Feb. 28, 1972, 47-24484; Feb. 28, 1972, 47-24486; June 30, 1972, 47-78142; Feb. 29, 1972, 47-20870

Int. Cl. F03b *11/02;* **H05b** *1/00;* **A45d** *20/12*

U.S. Cl. 417—234 **11 Claims**



1. A hair dryer comprising, in combination, a hollow handle assembly made up of a cylindrical portion and a tangentially extending handle, a hollow nozzle assembly made up of a cylindrical portion and a tangentially extending nozzle, one of the cylindrical portions having a cylindrical sidewall and the other being open-sided for the nested fitting together of the two cylindrical portions in coaxial relationship, a motor and fan assembly mounted within the cylindrical sidewall for discharge of air through the nozzle, the two assemblies being generally symmetrical and coaxially pivoted together for rela-

tive scissoring movement between an operating condition in which the handle and nozzle are in "L" configuration and a collapsed condition in which the handle and nozzle lie compactly side by side.

3,846,048

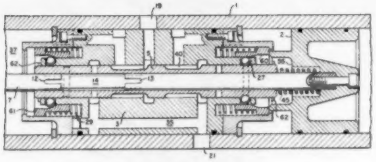
FREE PISTON PUMP

Roland W. Robbins, Jr., Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 250,302, May 2, 1972, abandoned. This application Nov. 26, 1973, Ser. No. 419,013

Int. Cl. F04b *17/00*

U.S. Cl. 417—393 **1 Claim**



1. A fail safe free piston pump, comprising:

a cylindrical housing with a first and second end;

an inlet and an exhaust check valve at each of said first and second ends to admit and expell the fluid to be pumped into and out of the housing;

valve means located within said housing between said ends of said cylinder forming a first and second chamber within said housing, said valve comprising an axially slidable shuttle valve which directs a pressurized driving fluid from an external source alternatively to said first and second chamber as said shuttle valve reciprocates axially; first and second pistons slidably mounted within said housing on opposite sides of said valve means said pistons being driven by pressurized fluid;

a rod means interconnecting said pistons and slidably and concentrically mounted within said shuttle valve;

shuttle valve engaging and release means associated with each piston to releasibly hold said shuttle valve in a first and second position comprising a pair of retaining balls, a concave detent on the surface of said shuttle valve to receive said balls, a sliding collar means to selectively fix said balls within said detent to hold the shuttle valve in a fixed position;

a spring attached to each of said pistons to bias the shuttle valve during a portion of the stroke of the piston; and

a ring integral with each of said pistons which engages said sliding collar to move it axially and free said detent balls.

3,846,049

INTENSIFIER PUMP WITH HALF WAVE MODULATOR

James K. Douglas, Shorewood, Wis., assignor to The Oilgear Company, Milwaukee, Wis.

Filed Sept. 24, 1973, Ser. No. 400,318

Int. Cl. F04b *35/00*

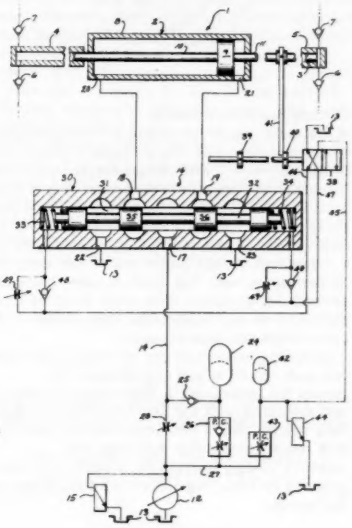
U.S. Cl. 417—404 **2 Claims**

1. In a reciprocating intensifier pumping system having two pumping pistons to alternately pump intensifier fluid at a predetermined pressure and at a constant flow rate, a power cylinder having a double ended and double acting working piston connected in line with said pumping pistons, said power cylinder having cylinder ports at opposite ends thereof, a supply pump to deliver hydraulic fluid at a constant rate, a reversing valve operable at each predetermined stroke of the working piston to reverse the connections of said cylinder ports across said pump and conduct hydraulic fluid therebetween,

said reversing valve having an inlet port at an open center in said valve between a pair of outlet ports closely connected respectively to said cylinder ports, said inlet port connected to a delivery line from said supply pump, a pair of return ports next adjacent said outlet ports and connected to a return to said supply pump, a valve member having a pair of spaced apart lands defining said open center and biased to a normally inoperative center position in which said lands open said outlet ports to each other through said valve center while blocking said outlet ports to said return,

said valve member having two operating fluid directing control positions, in one of said operating positions of said valve member said valve connects said inlet port to a first of said outlet ports and connects a second of said outlet ports to said return, in the other of said operating positions of said valve member said valve connects said inlet port to said second outlet port and connects said first outlet port to said return,

said valve member in moving from said one operating position to said other operating position sequentially provides: blocking of said return to flow from said second



outlet port, opening of said second outlet port to said valve center and to flow from said first outlet port, blocking of said first outlet port to said valve center and to flow from said second outlet port, and opening of said first outlet port to said return,

said working piston at the end of a stroke in said power cylinder defines large and small volume ends respectively on opposite sides of the working piston,

and means timing the rate of movement of said valve member in shifting from one operating position to the other operating position so that while said valve member is in transit between said operating positions the valve conducts a very high velocity fluid surge generated by expansion of compressed fluid in said large volume end of the power cylinder to the small volume end thereof and at the time of the peak value of said surge said valve member closes said large volume end to any return of said surge and opens said large volume end to pump return, whereby the momentum of said surge to said low volume end of the power cylinder is effective to initiate a reverse stroke of the working piston.

3,846,050

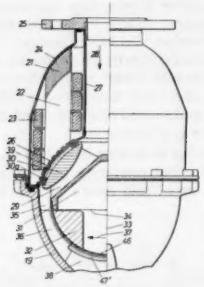
CENTRIFUGAL PUMPS HAVING ROTATABLE POLE RINGS SUPPORTED IN CONTACTLESS BEARINGS

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany

Division of Ser. No. 97,771, Dec. 14, 1970, Pat. No. 3,732,445. This application Mar. 29, 1973, Ser. No. 346,114

Int. Cl. F04b *17/00*

U.S. Cl. 417—420 **8 Claims**



1. A centrifugal pump having:

a. a first pole ring for producing a rotating magnetic field where said first pole ring includes a plurality of poles distributed over a first surface thereof part of which is inclined with respect to a major axis of said pump;

b. a second rotatable pole ring having the same plurality of poles as said first pole ring distributed over a second surface thereof part of which is inclined with respect to a major axis of said pump and to the same degree of inclination as said first surface, said first and second surfaces being spaced from each other to form a gap therebetween and the gap effecting a closure of magnetic circuits between adjacent poles;

c. a separating wall in said gap for hermetically sealing said first pole ring from said second pole ring;

d. means for introducing a fluid under pressure between said separating wall and said second pole ring to form a fluid bearing film to support the second pole ring axially with respect to said first pole ring; and

e. impeller blading operatively connected to said second pole ring for imparting a force on a fluid to be pumped by said pump.

3,846,051

VALVING ARRANGEMENT IN A HYDRAULIC DEVICE

Hugh L. McDermott, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 3, 1973, Ser. No. 320,791

Int. Cl. F01c *1/02*; **F03c** *3/00*; **F04c** *1/02*

U.S. Cl. 418—61 B **3 Claims**

1. A pulley motor of the gerotor type comprising:

a one-piece shaft having an externally-toothed member extending over a central portion thereof, said shaft having tubular portions at its opposite ends to define a fluid inlet and a fluid outlet for said motor;

a first hollowed cylindrical casing section disposed around said shaft at one side of said externally toothed member and journalling said shaft therein;

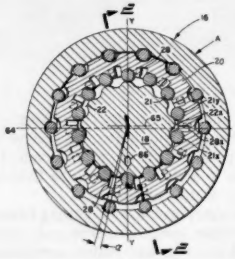
a second hollowed cylindrical casing section disposed at the other side of said externally toothed member and journalling said shaft therein;

a cylindrical ring casing member interposed and secured to said first and second casing sections to define a housing; an internally-toothed member having more teeth than said externally toothed member and being eccentrically disposed for movement relative to said externally toothed member, the teeth of said members interenmeshing to define contracting and expanding volume chambers during relative movement therebetween;

said internally toothed member being disposed within said ring casing member;

drive means co-acting between said ring casing member and said internally toothed member and operable to rotate said ring casing member in response to hypocycloidal movement of said internally toothed member about said externally toothed member; and

valve means operable between said inlet at one end of said shaft and said outlet at the other end of said shaft to connect said inlet to the expanding volume chambers and said outlet to contracting volume chambers to cause said internally toothed member to hypocycloidally move about said externally toothed member;



said valve means including first and second valve members mounted in said housing for rotation therewith adjacent opposite ends of said internally toothed member,

said valve members each having a plurality of flow passages therein, the number of flow passages in each member being equal to the number of volume chambers, a particular one of said flow passages in each member being associated with a particular one of said volume chambers, and said internally toothed member having a like plurality of flow recesses in each axial end surface thereof, the arrangement of said recesses being such as to provide a fluid flow path between the expanding chambers and their associated passages in said first valve member and between the contracting chambers and their associated passages in said second valve member through said recesses during movement of said internally toothed member relative to said externally toothed member.

3,846,052

METERING PUMP

Elias W. Scheibe, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

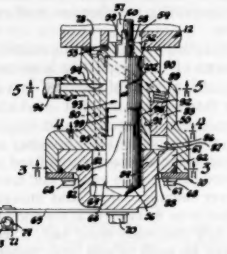
Filed Aug. 8, 1973, Ser. No. 386,603

Int. Cl. F01c *21/04*

U.S. Cl. 418—84 **4 Claims**

1. An oil metering pump for metering oil to lubricate an engine's seals comprising a pump inlet port, a pump outlet port, pumping means for pumping oil from said pump inlet port to said pump outlet port at a rate that increases with increasing engine load, a pressure controlled delivery port, pressure control valve means oppositely biased by oil pressure from said pump inlet port and from said pump outlet port for

providing controlled connection of said pump outlet port to said pressure controlled delivery port so that the oil pressure in said pressure controlled delivery port is dependent on the pressure developed by said pumping means and is independent of varying pressure at said pump inlet port, a pump discharge port for delivering oil from said pump to lubricate the engine's seals, a bypass port connected to said pump inlet port, and discharge-bypass valve means driven at a speed proportional to engine speed for connecting said pressure controlled delivery port alternately to said pump discharge port and said bypass port so that oil from said pressure con-



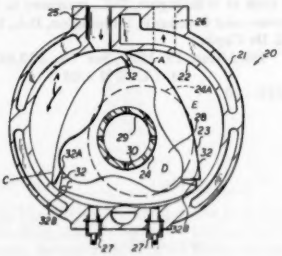
trolled delivery port is intermittently delivered back to said pump inlet port to effect substantially uniform oil flow through said pressure controlled delivery port at substantially constant engine loads to maintain substantially uniform oil flow for seal lubrication at substantially constant engine loads.

3,846,053

ROTARY INTERNAL COMBUSTION ENGINE HAVING DYNAMIC FLUID SEALS

Stanley Roberts, 36 Skyline Ter., Spring Valley, N.Y. 10977

Filed July 16, 1973, Ser. No. 379,739
Int. Cl. F01c *19/00*; **F04c** *27/00*
U.S. Cl. 418—94 **9 Claims**



1. A rotary internal combustion engine comprising:
a housing,
a rotor rotatably journalled within said housing,
and a fluid dynamic sealing means forming a fluid seal between said housing and said rotor,
said fluid sealing means comprising a nozzle formed in said rotor,
and means for directing a fluid through said nozzle at supersonic speed.

3,846,054

APPARATUS FOR FABRICATING DOUBLE-SKIN FOAM CORE CONSTRUCTION PANELS

Bernard H. Davis, Stoney Creek, Ontario, Canada, assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Sept. 5, 1973, Ser. No. 394,411
Int. Cl. B32b *5/20*
U.S. Cl. 425—110 **10 Claims**

1. In apparatus for assembling a succession of foam filled construction panels each comprising a liner sheet, a facing sheet, and a foamed-in-place foam core, the two sheets having central webs, first edges and second edges, the combination comprising sequential zones including

A. a sheet assembly zone having
applicator means for applying a resilient strip connector to the first edge of the liner sheet; and
engager means for engaging the first edge of the facing sheet with said resilient strip connector, thereby to provide a resilient strip connection between the first edges of the two sheets, the two sheets being positioned with the central webs thereof in confronting relation;

B. a sheet diverging zone having
means for diverging the thus joined sheets along second edges thereof remote from said resilient strip connection, thereby to provide an opening therebetween;

C. a foaming zone having
distributing means extending through said opening between the two sheets for distributing foamable foam forming ingredients along the length and across the width of the liner sheet;

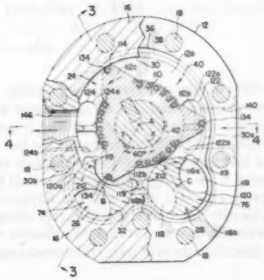
D. a sheet converging zone having
means for converging the two sheets along the second edges thereof to position the central webs thereof in confronting relation, and with the actively foaming foam forming ingredients between the thus aligned sheets; and conveyor means for supporting and moving the two sheets through said sequential zones.

3,846,055

ABUTMENT ROTARY HYDRAULIC MOTOR OR PUMP

Robert Wesley Brundage, 2809 Wakonda Dr., St. Louis, Mo. 63121

Filed July 31, 1972, Ser. No. 276,662
Int. Cl. F01c *1/08, 19/00*; **F03c** *3/00*
U.S. Cl. 418—124 **18 Claims**



1. A positive displacement device for fluids comprising housing means having rotor and abutment valve chambers,

said rotor chamber including an arcuate wall and said abutment valve chamber including a circular wall intersecting said rotor chamber wall, cooperable rotatable rotor and abutment valve members disposed respectively in said rotor and abutment valve chambers, fluid inlet and outlet ports at spaced locations about said rotor chamber wall and opening axially into said rotor chamber, said rotor comprising a hub and at least one lobe projecting radially outwardly from said hub, said lobe having an outer end provided with a longitudinally extending recess opening radially outwardly of said end, a sealing pin in said recess, said recess opening having a circumferential width less than the diameter of said pin, said outer end of said lobe and said rotor chamber wall being radially spaced such that said recess communicates with said rotor chamber when said pin engages said rotor chamber wall for fluid under pressure to enter said recess from said rotor chamber, said outlet port having an end disposed in the path of movement of said recess for communicating said outlet port with said recess to reduce the fluid pressure behind said rotor lobe prior to movement of said rotor lobe past said end of said outlet port.

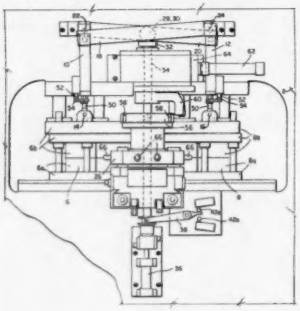
ERRATUM

For Class 425—110 see:
Patent No. 3,846,054

3,846,056
TURRET LOWERING MECHANISM

Joseph C. Flynn, Bridgeton, N.J., assignor to Wheaton Industries, Millville, N.J.

Division of Ser. No. 189,978, Oct. 18, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,696
Int. Cl. B29c *1/16*
U.S. Cl. 425—154 **4 Claims**



1. In a machine having a turret and a plurality of independent mold sets disposed radially of said turret each of said mold sets having a stationary mold half and a movable mold half, said movable mold half including means for moving said movable mold half in a path parallel to the axis of said turret toward and away from said stationary mold half to close and to open, respectively, said mold set, the improvement comprising a mechanism for moving said turret along its axis in conjunction with the movement of said movable mold halves in the closing direction thereof only, said mechanism comprising

a. biasing means for urging said turret along its axis in a direction parallel that of said movable mold members when moving away from said stationary mold members,

b. connecting members extending from each of said movable mold halves in a path generally coincident with the direction of movement of said respective movable mold half during the movement thereof away from said respective stationary mold halves,

c. lever members extending from each of said connecting members, at the end thereof opposite that at which it is connected to said respective movable mold half, to fixed points spaced therefrom in a direction lying in a plane perpendicular to the axis of said turret,

d. all of the connections between said movable mold halves, said connecting members, said lever members and said fixed points being such as to permit movement of said connecting members and said lever members in conjunction with the movement of said movable mold halves,

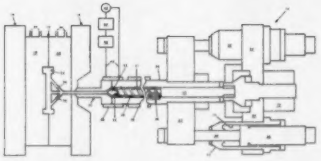
e. each of said lever members having, at a point thereon intermediate its ends at which it is connected to said respective connecting member and said respective fixed point, a cam,

f. said turret including a cam receiving member for engaging all of the cams of said respective lever members on the peripheral portions thereof disposed in a direction from the centers thereof opposite that in which said turret is urged by said biasing means, said improved machine having two mold sets, the lever member associated with each of which being connected to a fixed point lying in a plane perpendicular to the axis of said turret and including said lever member when said movable mold connected to said lever member is at the end of its movement away from said stationary mold half, wherein said cams are positioned on each of said lever members at a point midway between the points at which said respective lever member is connected to said respective connecting member and to said respective fixed point, wherein said machine is an injection blow molding machine having a twin plate press frame, said fixed points being mounted on said frame, wherein said biasing means comprises a hydraulic cylinder for applying a constant force to said turret along the axis thereof, wherein said connecting member includes means for sensing excessive resistance force encountered in the axial movement of said turret in the direction parallel that of said movable mold halves during the movement thereof toward said stationary mold halves.

3,846,057
APPARATUS FOR INJECTION MOLDING OF RUBBER

John D. Counceller, Mount Gilead; Robert T. De Capite, Worthington Hills; John Samuel Burpulis, and Robert David Soufie, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., by said Counceller & De Capite

Filed Mar. 13, 1972, Ser. No. 233,889
Int. Cl. B29f *1/08*
U.S. Cl. 425—207 **1 Claim**



1. In a cyclically operable reciprocating screw injection molding machine for molding a succession of articles of an elastomeric material, said machine including

a reciprocable, rotatably driven screw disposed within a barrel having an outlet adjacent its front end and an inlet displaced rearwardly from said outlet,

mold means operably connected to said barrel outlet,

means for rotating said screw for masticating and heating said material while feeding it toward said front end of the barrel and while said rotating screw is recprocated toward the rear of said barrel,

means for causing forward reciprocation of said screw to inject said heated material through said barrel outlet into said mold means, and

means for heating said mold means to effect at least substantial curing of said elastomeric material,

the improvement comprising:

means for causing the screw to rotate during an initial part of the rearward reciprocation of the screw in each cycle at a first speed sufficient to elevate the temperature of said elastomeric material to a first level;

means for causing increased rotational speed of the screw during the remaining part of said rearward reciprocation of the screw in each cycle to elevate the temperature of said elastomeric material accumulated in rearward portions of the barrel to a level close to the temperature of the elastomeric material near said outlet; and

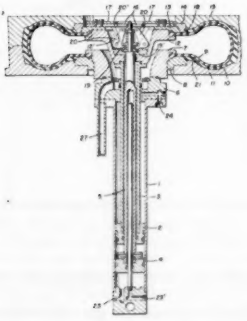
means for feeding elastomeric material into said barrel inlet at rates determined by the demand of the screw for new material at any speed of rotation of said screw.

3,846,058

APPARATUS FOR WITHDRAWAL OF CURED TIRES FROM A PRESS FOR SHAPING AND CURING TIRES

Shoushi Yoshida; Atsuaki Iwama; Takashi Okada, and Tetuo Suda, all of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Division of Ser. No. 78,020, Oct. 5, 1970, Pat. No. 3,714,321.
This application Aug. 7, 1972, Ser. No. 278,606
Claims priority, application Japan, Oct. 6, 1969, 44-80070
Int. Cl. B29h *5/02*
U.S. Cl. 425—38 **4 Claims**



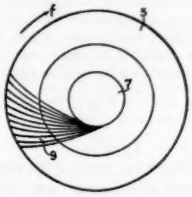
1. In a press for shaping and curing tires having upper and lower mold sections and a collapsible bladder having upper and lower beads, a center mechanism for removing a cured tire from the mold sections comprising, means for clamping the upper bead of the bladder, a plurality of segment plate means positioned exteriorly of the bladder and above the upper bead of the tire on said means for clamping the upper bead of the bladder, means for lowering said means for clamping the upper bead of the bladder to separate the bladder from the tire and to lower said segment plate means to a position below the upper bead of the tire, cam means selectively expanding said segment plate means to a diameter exceeding the diameter of the upper bead of the cured tire, and means below the lower mold section to actuate said cam means whereby said segment plate means engages the upper bead of the cured tire upon movement relative thereto.

3,846,059

PLATE EXTRUDER

Claude Julien Rene Wagner, 50 Avenue du General Leclerc, Pont-a-Mousson, France

Continuation of Ser. No. 878,523, Nov. 20, 1969, abandoned.
This application July 19, 1973, Ser. No. 380,742
Claims priority, application France, Nov. 28, 1968, 68.175655
Int. Cl. B29f *3/02*
U.S. Cl. 425—381.2 **15 Claims**



1. A disc plate extruder for plastic material having a rotor and stator in the form of disc plates with their facing surfaces in spaced parallel relation to provide a gap in between, means for rotating the rotor relative the stator about its axis, a die opening through the axial portion of the stator through which the plastic material is extruded, and means for introducing material to be extruded into the gap between the disc plates, the improvement comprising projections extending from the facing surfaces of the stator and rotor into the gap, each having a height which, when added together, is less than the width of the gap to provide a clearance between the crests of the projections during rotational movement of the rotor, said projections extending from about the axial portions to about the peripheral portions of the stator and rotor with the cross sectional shape of the rotor projections comprising a leading portion in the form of a wall facing forwardly in the direction of rotational movement of the rotor and which extends substantially perpendicularly from the surface of the rotor to a crest and a trailing portion which tapers rearwardly downwardly from the crest to the surface of the rotor for mergence therewith in spaced relation from the next projection to provide a flat surface portion of the rotor therebetween, and with projections in the stator corresponding in shape with the projections in the rotor, but facing in the opposite direction.

3,846,060

TROWELLING TOOL

George A. Otis, 715 E. Los Angeles Dr., Vista, Calif. 92083

Filed May 29, 1973, Ser. No. 364,373
Int. Cl. E04f *21/32*
U.S. Cl. 425—458 **10 Claims**

1. A trowelling tool for mastic caulking compounds disposed bead-like at the juncture of a pair of right angularly arranged surfaces, comprising:

a body member to span between said surfaces in spaced-apart relation to caulking at said juncture;

said body member having a bearing surface on each side to be aligned with and be guided by one of said angularly arranged surfaces, said bearing surfaces lying in planes at right angles to each other and at a 45° angle to a plane bisecting said juncture;

a trowelling finger trailing from said body member and extending angularly toward and into trowelling relation with caulking at said juncture;

said finger, having a terminal edge to pack and trowel caulking between the surfaces at said juncture to form a bead, said finger having, contiguous with each end of said terminal edge, scraper means operable to bear on and be guided by the surfaces adjacent said juncture and to displace excess caulking laterally in spaced apart relation to said bead.

3,846,061

FLAME-DETECTION CIRCUITS

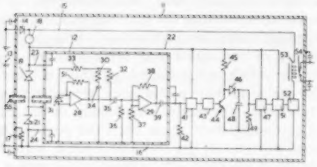
Maurice James Wright, Birmingham, and Charles Peter Cockshott, Coventry, both of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Mar. 22, 1973, Ser. No. 344,031

Claims priority, application Great Britain, Mar. 25, 1972, 14116/72

Int. Cl. F23n *5/08*

U.S. Cl. 431—79 **7 Claims**



1. A flame-out detection circuit for use with gas turbine engines, comprising a photo-voltaic source for monitoring the flame, a control network which when energised initiates ignition, and an a.c. amplifier coupling said source to the control network, the flicker of the flame producing in said source an a.c. signal which is amplified and used to hold the control network de-energised.

3,846,062

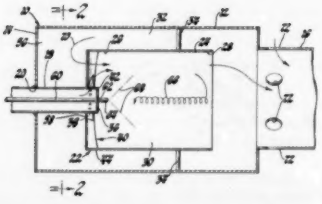
EXTERNAL RECIRCULATION BURNER

Ronald E. Quinn, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,750

Int. Cl. F23l

U.S. Cl. 431—116 **5 Claims**



1. A combustor assembly having an outer casing including an inlet dome on one end thereof, a tubular combustion chamber liner located within said outer casing having an inlet end and an outlet end, said linear being spaced inwardly of said outer casing to define an outer recirculation passage, means directed through said outer dome for directing primary inlet air and fuel to said combustion chamber, a plurality of swirler blades located in the inlet of said combustion chamber liner for producing a swirl induced recirculation of flow from the outlet end of the combustion chamber to the inlet end thereof during the combustion process, each of said swirler blades having a hollow duct portion and including an inlet opening at the base thereof for directing primary air into the interior of the blades, each of said blades further including a jet nozzle slot on the surface thereof for producing a jet flow across said vanes to induce recirculation flow through said combustion chamber from the inlet to the outlet thereof thence through said recirculation passage between said combustion chamber liner and said outer casing for enhancing recirculation of heated gas from the combustion chamber to the fuel supply means for producing improved prevaporization of fuel particles prior to combustion thereof within the combustion chamber defined by said liner.

3,846,063

LIGHTER EMPLOYING ELECTRIC SPARK IGNITION

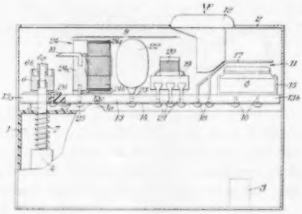
Henri Edouard Francois Marie Courier-de-Mere, Paris, France, assignor to Bicosa Societe de Recherches, Clichy, France

Filed Mar. 19, 1974, Ser. No. 452,999

Claims priority, application France, Apr. 10, 1973, 73.12865

Int. Cl. F23q *2/16*

U.S. Cl. 431—255 **19 Claims**



1. A lighter employing electric spark ignition, which lighter comprises:

a body including a reservoir for gas, said body having two fixed structures defining a space therebetween;

a burner supported within said body;

a gas outlet valve arranged between said burner and the reservoir of said body for controlling the supply of gas from the reservoir to said burner;

a supporting plate movably mounted in the space between said two fixed structures of said body and having a portion operatively engaged with said gas outlet valve for opening said valve on movement of said supporting plate;

an electric cell disposed on said supporting plate;

a voltage-raising circuit disposed on said supporting plate;

a switch disposed on said supporting plate for electrically connecting said electric cell to said voltage-raising circuit;

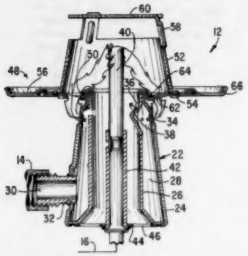
an ignition electrode disposed on said supporting plate and adjacent said burner; and

a control member supported by said body and operable to move said supporting plate and close said switch.

3,846,064
FLAME SPREADER WITH STRESS RELIEF FOR A BURNER

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 28, 1973, Ser. No. 401,785
Int. Cl. F23g 9/00
U.S. Cl. 431—285 8 Claims

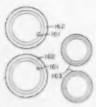


1. A flame spreader for a burner comprising
mounting means including a plurality of radially extending supporting struts,
an annular flame spreader portion, and
a stress relief portion joining one of the plurality of struts to the annular flame spreader portion.

3,846,065
VAPOR GENERATORS WITH LOW POLLUTANT EMISSION

William P. Lear, Verdi, Nev., assignor to Lear Motors Corporation, Reno, Nev.

Continuation-in-part of Ser. No. 261,158, June 2, 1972,. This application June 12, 1972, Ser. No. 261,691
Int. Cl. F23d 13/12
U.S. Cl. 431—347 6 Claims



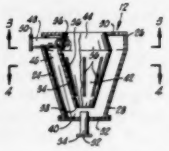
1. A combustor comprising a firewall containing a combustion chamber, means for presenting fuel into the combustion zone of said chamber constituting its primary zone, means for injecting air into said primary combustion zone and the successive secondary combustion zone of said chamber, means associated with said firewall for directing major portions of the injected air generally counter to the flow direction of the combusted gases from said primary to the secondary zones and outwardly of said chamber, said air injecting means including apertures in the firewall that admit the air into said chamber as tubular streams, and baffle means arranged within the firewall adjacent its apertures, said baffle means being shaped to effect said counter direction of the injected air.

3,846,066
FUEL BURNER APPARATUS

Harold O. Ebeling, and Russell D. Smith, both of Houston, Tex., assignors to Black, Sivalls, & Bryson, Inc., Houston, Tex.

Filed May 24, 1973, Ser. No. 363,575
Int. Cl. F23d 15/00
U.S. Cl. 431—351 9 Claims

3. An improved fuel burner apparatus which comprises:
a hollow outer shell having a forward end and a rearward end;
a front wall secured to the forward end of the outer shell thereby closing the forward end;
a rear wall secured to the rearward end of the outer shell thereby closing the rearward end;
a hollow inner liner having a forward end and a rearward end supported within the outer shell so that an air passageway is formed between the outer shell and the inner liner, the forward end of the inner liner extending through the front wall and the rearward end of the inner liner being spaced a predetermined distance from the

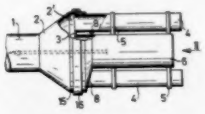


rear wall, the inner liner including one or more openings therein positioned intermediate to the ends thereof so that a portion of combustion air flowing through said air passageway is caused to flow through said openings into the interior of the inner liner;
an air inlet formed in the outer shell adjacent the forward end thereof for admitting combustion air into said air passageway; and
a fuel inlet attached through said rear wall for injecting fuel into the outer shell at a position between the rear wall and the rearward end of the inner liner.

3,846,067
ROTARY FURNACE

Manfred Durr, Oelde, Germany, assignor to Polysius AG, Neubeckum, Germany

Filed Aug. 14, 1973, Ser. No. 388,197
Claims priority, application Germany, Aug. 22, 1972, 22411207
Int. Cl. F28d 11/08
U.S. Cl. 432—80 4 Claims



1. A rotary furnace comprising a discharge tube having an outlet end, a coaxial frustoconical extension fixedly mounted on the outlet end of said discharge tube and having a large diameter end of a diameter in excess of the diameter of said discharge tube, an integral cylindrical extension mounted upon the large diameter end of said frustoconical extension and projecting coaxially therefrom by a distance substantially less than the axial dimension of said frustoconical extension, a plurality of cooling tubes having inlet ends projecting into said cylindrical extension and fixedly suppported therefrom at symmetrically spaced positions around the axis of said cylindrical extension with the axes of said cooling tubes extending parallel to the cylindrical extension axis, support means cooperatively supporting said cooling tubes in the aforementioned relationship to each other, and an annular bearing ring

mounted upon the outer periphery of said cylindrical extension.

3,846,068

REFRACTORY STRUCTURE, PARTICULARLY FOR A METALLURGICAL SHAFT FURNACE

Jacobus Van Laar, Santpoort, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V.

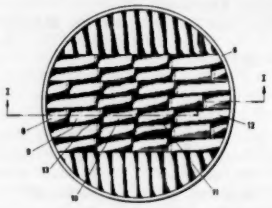
Filed Mar. 13, 1972, Ser. No. 234,138

Claims priority, application Netherlands, Mar. 15, 1971, 7103442

Int. Cl. F27d *1/00*

U.S. Cl. 432—251 **5 Claims**

1. A refractory bottom structure for a metallurgical shaft furnace comprising a plurality of horizontal layers of separate refractory block elements, wherein at least the upper layers thereof have at least part of the refractory block elements arranged one to the side of the other with open expansion joints horizontally spaced between them, the width of said joints when the block elements are in cold condition corresponding to the thermal expansion of the bordering refractory block elements in the direction towards said joints over a



temperature range up to about 50° to 200° C below the operating temperature of said elements.

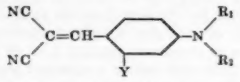
CHEMICAL

3,846,069
SUBLIMATION TRANSFER DYEING WITH STYRYL DYES

Hans-Joerg Angliker and Richard Peter, Basel, and Klaus Artz, Muttenz, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 843,184, July 18, 1969. This application May 15, 1972, Ser. No. 253,612
Claims priority, application Switzerland, July 26, 1968, 11,235/68
Int. Cl. D06p *5/00*
U.S. Cl. 8—2.5 **6 Claims**

1. In the process of sublimation transfer printing for coloring textile materials containing acrylic fiber, polyester fiber, or mixtures thereof, the improvement of using a styryl dyestuff which sublimes within a period of 60 seconds at 180 to 200° C. and which has the formula



wherein R_1 and R_2 each is hydrogen, an unsubstituted alkyl group of 1 to 8 carbon atoms, or an alkyl group of 1 to 8 carbon atoms substituted with halogen, phenyl, cyano, alkoxy, hydroxy, acyloxy, alkylsulphonyl, alkylcarbamoyloxy, phenylcarbamoyloxy, or alkyloxycarbonyloxy, and Y is hydrogen or methyl.

3,846,070
PROCESS FOR THE DYEING OF POLYESTER TEXTILE MATERIALS

Werner Langmann and Robert Kuth, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 23, 1971, Ser. No. 211,727
Claims priority, application Germany, Dec. 23, 1970, P 20 63 330.1
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 **11 Claims**

1. Process for dyeing polyester textile material comprising the steps of

(1) immersing the polyester textile material in a non-aqueous dyebath consisting essentially of

(a) water-immiscible organic solvent having a boiling point of 40° C.–150° C.;

(b) disperse dyestuff;

(c) water-soluble aromatic polysulphonic acid anionic dispersing agent; and

(d) cationic dispersing agent, non-ionic dispersing agent or mixture thereof; and

(2) leaving the dyeing in said dyebath until the desired depth of color has been obtained.

3,846,071
PROCESS OF INHIBITING CORROSION BY TREATMENT WITH PHOSPHATE-CYCLIC AMIDINE SALTS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

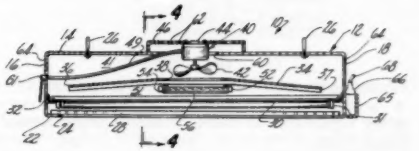
No Drawing. Original application Feb. 12, 1969, Ser. No. 798,789. Divided and this application Jan. 21, 1972, Ser. No. 219,832
Int. Cl. C23f *11/14, 11/16*
U.S. Cl. 21—2.7 A **10 Claims**

1. A process of inhibiting corrosion which comprises treating a corrosion system with an imidazoline salt where the salt moiety is an acidic phosphate ester of an oxyalkylated alcohol employed alone or in conjunction with a carboxylic acid.

3,846,072
ULTRAVIOLET LAMP FIXTURE

Lawrence Patterson, 5272 Doherty Drive, West Bloomfield, Mich. 48033

Filed June 28, 1973, Ser. No. 374,576
Int. Cl. A61l *9/00;* **H05b** *33/02*
U.S. Cl. 21—74 R **8 Claims**



1. An ultraviolet lamp fixture for purifying the air within a room, said fixture comprising a housing having means for suspending said fixture from the ceiling of said room, the bottom wall of said housing having a longitudinally extending opening defining an air inlet through which the air in said room is communicated to the interior of said fixture; an elongated ultraviolet ray tube mounted in said housing above said air inlet; a longitudinally disposed air deflector wall mounted in said housing above said tube, the opposite longitudinal ends of said deflector wall being longitudinally spaced from the end walls of said housing, said deflector wall being inclined upwardly from the said longitudinal ends of said deflector wall and terminating in an intake opening; a motorized fan supported by the top wall of said fixture housing and disposed immediately above said deflector wall intake opening for positively moving air from said room into said housing at said air inlet end and through said longitudinal wall intake openng to the space behind said deflector wall, said housing having a plurality of apertures on said opposite longitudinal end walls and said top wall for exhausting air from said space to said room, a portion of said air flowing through said space passing between said end walls and said oposite ends of said deflector wall for recirculation through said intake opening, whereby all of the air entering said housing through said air inlet is passed over said tube and the stream of air entering said housing and exhausted back to said room is purified by the radiation emitted by said tube.

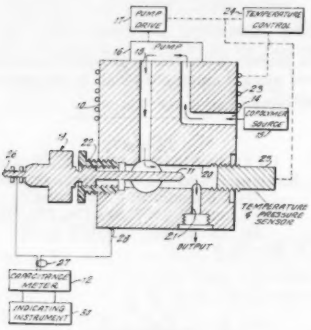
3,846,073
PROCESS AND APPARATUS FOR MEASURING THE COMPOSITION OF FLUID PLASTICS

Henry T. Baum, Mattoon, and Claude J. Stiles, Tuscola, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 13,256, Feb. 20, 1970. This application Apr. 8, 1971, Ser. No. 132,844
Int. Cl. C08f *15/04;* **G01n** *27/22;* **G01r** *27/26*
U.S. Cl. 23—230 A **4 Claims**

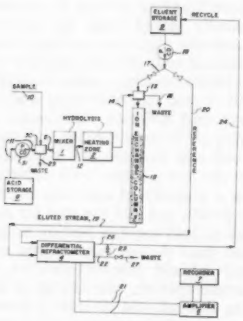
1. A process for determining the proportion of monomers in a copolymer, wherein the monomers have dif-

ferent dielectric constants, said process comprising contacting a capacitive detector responsive to the dielectric constant of fluids with a fluid stream of said copolymer in a zone of relatively constant temperature and pressure,



measuring the capacitance of the capacitive detector while in contact with the fluid stream and comparing the value of the capacitance so measured with a predetermined reference value.

3,846,074
DETERMINATION OF P_2O_5
Angelo Tulumello, Lansing, and Sixt Frederick Kapff, Homewood, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed Mar. 22, 1972, Ser. No. 237,094
Int. Cl. G01n *21/46, 31/04*
U.S. Cl. 23—230 R **24 Claims**



1. A process for obtaining a representation of the total phosphate content of a sample containing phosphate and at least one other anion, comprising:

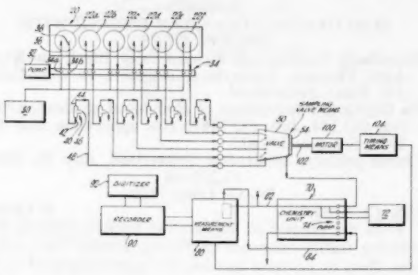
(1) hydrolyzing the sample with a dilute acid of sufficient strength and in sufficient quantity to convert substantially all of the phosphates to the orthophosphate form;

(2) separating the phosphate ions from other anions by ion-exchange chromatography, whereby an eluted stream containing a chromatographic distribution of the different anions is obtained;

(3) obtaining an indication of the refractive index of the phosphate-containing portion of said eluted stream; and

(4) converting said indication to a representation of the phosphate content.

3,846,075
APPARATUS FOR SIMULTANEOUS ANALYSIS OF FLUID
Francis J. Cioffi, Somerville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Sept. 25, 1972, Ser. No. 292,237
Int. Cl. G01n *1/10, 1/14*
U.S. Cl. 23—253 R **12 Claims**



1. Apparatus for the simultaneous analysis of fluid from a multiplicity of fluid supply cells comprising:

(a) means to remove a constant flow of fluid from said supply cells and deliver a constant supply of fluid to a sampling valve means;

(b) sampling valve means adapted for automatic selective sampling of the delivered fluid samples, said valve means comprising a hollow truncated conical barrel as an outer member and a truncated conical plug as an inner member contiguously received in said outer member, means to rotate one of said members relative to the other about a common axis, at least two conduits for the transmission of fluid to said valve connected to said barrel, all said conduits connected at points in a single plane perpendicular to said common axis, the plug including a peripheral channel, the contact between said inner and outer members forming a closure for said channel, a discharge passage in fluid communication with one of said members and said channel, said channel comprises a first section generally lying in the same plane as said conduits and being of a length less than the distance between two consecutive conduits, a second section in fluid communication with, and at an angle to, said first section, a third section in fluid communication with said second section and said discharge passage, said channel adapted to register with, and pass fluid from, said conduits to said discharge passage;

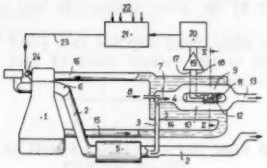
(c) assay means to measure the selected fluid samples in fluid communication with said sampling valve means; and

(d) timing means interconnecting said sampling valve means and said assay means to activate and control said assay means.

3,846,076
ANTI-POLLUTION CONTROL DEVICES FOR INTERNAL COMBUSTION ENGINES
Claude Henault, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France
Filed June 19, 1972, Ser. No. 264,333
Claims priority, application France, June 22, 1971, 7122690
Int. Cl. G01n *31/10;* **H01v** *1/32*
U.S. Cl. 23—254 E **7 Claims**

1. A quantitative detection device adapted to detect a component of a motor exhaust gas which comprises a

housing which encloses a chamber, entrance means for flow of a sample of exhaust gas tangentially into the chamber, discharge means spaced from the said entrance means for the gas to flow as one stream from the chamber, and intermediate the entrance means and discharge means a thermo-electric element disposed in the chamber which



divides the chamber into two symmetrical sections, said thermo-electric element having a hot surface exposed to one section and a cold surface exposed to the other section, said hot surface having a catalytic coating which initiates an exothermic reaction in the exhaust gases whereby an electric current is produced by the thermo-electric element.

3,846,077

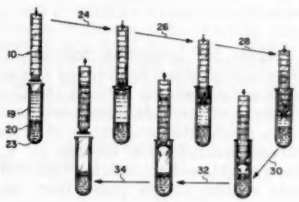
LIQUID SAMPLE COLLECTION TUBE

Philip Ohringer, 3 Winthrop Drive, Melville, N.Y. 11746

Filed Sept. 18, 1972, Ser. No. 290,039

Int. Cl. B01d *33/00;* **G01n** *1/12*

U.S. Cl. 23—259 **12 Claims**



1. A collection container for isolating a liquid sample from a specimen container comprising:

an elongated cylindrical tube having an outside diameter smaller than the specimen container, and including an aperture at one end communicative with said tube;

circular disc means formed radially at said aperture end of said tube for slidably engaging the internal cylindrical walls of the specimen container;

abutment means formed on said tube adjacent to said circular disc means for engaging and supporting at least a portion of said circular disc means; and

fluid resistance means disposed in said aperture to limit the fluid flow from said tube so that when said tube is inserted into the specimen container, said circular disc means will contact and be supported by said abutment means to form a seal against the internal specimen container walls and when said tube is removed from the specimen container, said circular disc means will separate from said abutment means to release the seal from the container walls.

3,846,078

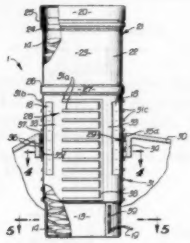
DISPENSING CONTAINER APPARATUS

James E. Brett, Huntington Beach, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Continuation of abandoned application Ser. No. 87,082, Nov. 5, 1970. This application May 31, 1973, Ser. No. 365,579

Int. Cl. B01d *11/02*

U.S. Cl. 23—267 A **1 Claim**



1. Container for dispensing water soluble solid treating agent and adapted to be partly immersed in water to be treated, said container comprising a cylindrical wall having an immersible reduced diameter lower portion including plural circularly spaced port means having knockout closures to pass water into said container, a plurality of annularly segmented ribs arranged to engage structure receiving and supporting the container in lower portion immersed condition, said ribs lying in vertically spaced radial planes with their corresponding segments in vertically alined and in spaced relation to define incremental immersion adjustments for said container lower portion in the water piural vertically extended and circularly distributed spaces which upon bodily rotation of the container pass and permit relative vertical movement of the ribbed and lower portions of the container wall at said structure, and a stop rib formed integrally with said segmented ribs and extending parallel with the container axis to be engaged by the supporting structure to arrest rotation of the container.

3,846,079

VERTICAL REACTION VESSEL FOR EFFECTING REACTION OF LIQUID AND GASEOUS REACTANTS BY LIQUID-GAS CONTACT

Jacob Alagy, La Celle St. Cloud, Bernard Cha, Chatou, and Cornelis Koen, Mareil Marly, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

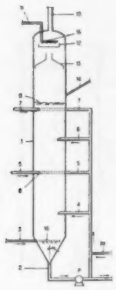
Continuation of abandoned application Ser. No. 38,729, May 19, 1970, which is a division of application Ser. No. 649,191, June 27, 1967, now Patent No. 3,609,176. This application June 13, 1972, Ser. No. 262,257

Int. Cl. C07f *5/04*

U.S. Cl. 23—283 **9 Claims**

1. An apparatus for effecting reaction of liquid and gaseous reactants by liquid-gas contact, which comprises a substantially vertical reaction vessel having a curvilinear wall, said vessel containing at least one liquid reactant at a predetermined liquid level therein; gas inlet means for introducing gaseous reactant into a zone of the liquid reactant in said vessel below the liquid level; an outlet duct for drawing out gas from said vessel above the liquid level; a liquid outlet duct for effecting withdrawal of the liquid reactant containing the resulting reaction products from the lower portion of the vessel below the zone of

introduction of said gaseous reactant; conduit means in communication with said liquid outlet duct, provided with pump means, for recycling a portion of the liquid reactant containing the reaction products to at least one contact zone above said gas inlet means within the liquid phase in said vessel; and at least one stirring duct means connected to said conduit means for injecting the recycle

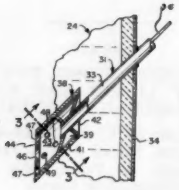


liquid into the contact zone in a tangential direction to impart to the liquid in the vessel a rotational movement in a single direction, each of said duct means including an injection nozzle extending horizontally and tangentially adjacent to the curvilinear wall of the vessel whereby said wall is continuously washed by the recycled liquid to prevent deposits of said reaction products thereon.

3,846,080
SHIELDED TIP ACCESS TUBE FOR A REACTOR PROBE

John P. MacLean and Henry B. Jones, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,753
Int. Cl. B01j *9/20, 11/04;* **G01k** *1/08*
U.S. Cl. 23—288 S **3 Claims**



1. In a regenerator for a fluidized catalyst wherein the particulated catalyst material is circulated within a regeneration compartment having vertical walls, in a turbulent flow by a carrier gas to form a fluidized bed, and wherein the condition of said fluidized bed is regulated to maintain predetermined operating conditions therein, the improvement for continuously monitoring the pressure within said fluidized bed comprising,

a conduit extending into said regenerator compartment and having an open end disposed in said fluidized catalyst bed, the other end of said conduit communicated with a source of a purge gas,

a pressure sensing element connected to said conduit, and in communication with said regeneration compartment,

a shield disposed about said conduit open end defining a chamber in communication with said fluidized bed whereby to receive the fluidized catalyst as well as purge gas at the conduit open end,

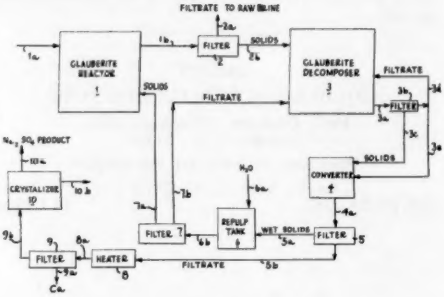
said shield including a cylindrical element having a perforated wall spaced from said conduit open end, thereby defining an annulus about the conduit, and a substantially flat perforated face plate at the end of said cylindrical shield element to define a partial closure to the latter adjacent to said conduit open end,

said face plate being disposed in a plane substantially parallel to the vertical walls of said regeneration compartment.

3,846,081
PROCESS FOR SEPARATING SODIUM SULFATE FROM BRINES

Warren E. Dean and John J. Posego, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1972, Ser. No. 232,770
Int. Cl. B01d *9/00;* **C01c** *5/16;* **C01f** *11/46*
U.S. Cl. 23—297 **11 Claims**



1. A process for recovering sodium sulfate from glauberite, which comprises hydrolyzing an aqueous slurry of glauberite at temperatures between 15° C. and 30° C. to form a slurry of insoluble sodium sulfate decahydrate and gypsum, raising the temperature of a slurry of the sodium sulfate decahydrate to between 33° C. and 100° C. to form a soluble sodium sulfate phase, and separating the soluble sodium sulfate phase from the insoluble gypsum.

3,846,082
PRODUCTION OF CRYSTALLINE BODIES OF COMPLEX GEOMETRIES

Harold E. Labelle, Jr., Quincy, Abraham I. Mlavsky, Lincoln, and Charles J. Cronan, Taunton, Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed Nov. 8, 1971, Ser. No. 196,449
Int. Cl. B01j *17/00*
U.S. Cl. 23—301 SP **13 Claims**

1. Method of growing from a melt of a selected crystalline material an essentially monocrystalline body of complex shape having a predetermined cross-sectional configuration and a predetermined curvilinear transformation of said cross-sectional configuration lengthwise of said body, said method comprising:

establishing a thin liquid film of said selected material on and substantially fully covering a non-liquid substantially horizontal surface that terminates in sharp edges and has an edge configuration conforming to said predetermined cross-sectional configuration, the surface tension of said film being such

as to prevent said film from overrunning said sharp edges;

controlling the temperature of said film so that it has a temperature gradient along its depth with the film being hottest at said surface;

growing and pulling an essentially monocrystalline body from the cooler side of said film at a selected rate with growth occurring by successive accretions of solid at all points along the horizontal expanse of the interface of said body and said film;

simultaneously rotating said body at a rate at which adherence of said film to said body and growth

of said body can subsist about a predetermined axis which is located so that successive accretions of solid cause said body to acquire a complex shape that is characterized by said predetermined cross-sectional configuration and a curvilinear transformation of said predetermined cross-sectional configuration lengthwise of said body; and

simultaneously supplying an additional quantity of said selected material in liquid form to said surface via at least one opening in said surface to replace the liquid consumed in growing said body from said film.

3,846,083

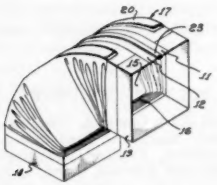
FLUID CONDUIT ARRANGEMENT

John F. Kramer, Fullerton, Calif. (2235 W. Broadway, Suite H–102, Anaheim, Calif. 92804)

Application Apr. 29, 1971, Ser. No. 138,685, now Patent No. 3,726,322, which is a continuation-in-part of abandoned application Ser. No. 826,358, May 21, 1969. Divided and this application Apr. 9, 1973, Ser. No. 349,028

Int. Cl. B21d *53/00*

U.S. Cl. 29—157 R **9 Claims**



1. The method of providing a fluid conduit comprising the steps of

arranging a plurality of elongated members so as to define a substantially rectangular pattern having open spaces therein,

positioning a substantially flat and rigid strip at either end of said pattern to form a part thereof,

holding said elongated members and said strips together in said pattern,

superimposing a flexible sheet on said elongated members to cover said open spaces,

then bending said elongated members, said sheet and said strips in a direction generally transverse to said strips so as to cause said strips and elongated members to be given a permanent set such that opposite edge portions of said pattern are brought into adjacency and said sheet, said strips and said elongated members define a passageway collectively therethrough and said strips extend around the ends of said passageway,

and attaching together said edge portions of said pattern when so bent,

thereby providing a fluid conduit.

3,846,084

CHROMIUM-CHROMIUM CARBIDE POWDER AND ARTICLE MADE THEREFROM

John Franklin Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,433

Int. Cl. B23p *3/00*

U.S. Cl. 29—191.2 **12 Claims**

1. A powder containing from about 0.2 wt. percent to about 5.4 wt. percent carbon and wherein substantially every particle of said powder consists essentially of chromium and at least one chromium carbide taken from the class consisting of $Cr_{23}C_6$; Cr_7C_3 and Cr_3C_2.

3,846,085

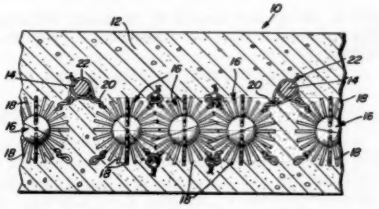
FERROUS AGGREGATE FOR CONCRETE

Edward D. Dunn, Jr., Albany, Ga., assignor to Versatile Structures, Incorporated, Leary, Ga.

Filed Jan. 27, 1972, Ser. No. 221,232

Int. Cl. B21c *37/00*

U.S. Cl. 29—191.6 **11 Claims**



1. An aggregate for concrete, comprising a plurality of longitudinally extending members emanating from a carrier, said carrier being a longitudinally extending strip wrapped around a conventional concrete reinforcing rod, and said members extending radially therefrom.

3,846,086

IGNITABLE FUEL PACKAGE

Conrad J. Balch, R.R. 2, Box 208, and Armand W. Gendreau, 532 Main St., both of Sandpoint, Idaho 83864

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,266

Int. Cl. C10l *11/00*

U.S. Cl. 44—40 **6 Claims**

1. An ignitable fuel package comprising in combination finely divided particles comprising cellulose, finely

divided carbon particles, at least 90 weight percent of said carbon particles having a major particle dimension below ¼ inch, a normally liquid fuel and an impervious combustible plastic envelope, said particles comprising cellulose and said carbon particles being substantially saturated with said normally liquid fuel and being sealed in said envelope, said normally liquid fuel being present in an amount of 24 to 60 weight percent based on the contents of said package and being selected from normally liquid hydrocarbons and normally liquid oxygenated hydrocarbons, said normally liquid hydrocarbons substantially comprising paraffins.

3,846,087

METHOD OF REDUCING THE VISCOSITY OF CARBON-CONTAINING OILS

Roger M. Dille, La Habra, and Ronald W. Chapman, La Mirada, Calif., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application Sept. 22, 1971, Ser. No. 840,236, now abandoned. Divided and this application Sept. 22, 1971, Ser. No. 182,825

Int. Cl. C10l *1/32*

U.S. Cl. 44—51 **3 Claims**

1. In a method for recovering carbon from a carbon-water dispersion by contacting said dispersion with an oil blend to form a carbon oil slurry, the improvement consisting of using an oil blend of 4 to 60 weight percent of asphaltic residual oil boiling above 1000° F., said amount being sufficient to satisfy the oil absorption number of said carbon and the remainder of said blend comprising a light, liquid, non-asphaltic containing hydrocarbon boiling below about 1000° F., from the group of kerosene, gas oil, diesel fuel, shale fuel oil, deasphalted oil and decanted oil from a fuel catalytic cracking unit whereby the resulting carbon-oil slurry remains pumpable even when containing up to 20 weight percent of carbon.

3,846,088

PROCESS OF DRYING ETHERS

Ronald W. Brown and Ronald W. Reynolds, Wilmington, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 22, 1971, Ser. No. 210,910

Int. Cl. C10l *1/02*

U.S. Cl. 44—56 **8 Claims**

1. A process comprising reacting a tertiary olefin containing from 4 to 6 carbon atoms with an alcohol containing from 1 to 3 carbon atoms to form an ether having the structure R—O—R′ wherein R is a tertiary alkyl group containing from 4 to 6 carbon atoms and R′ is an alkyl group containing 1 to 3 carbon atoms, washing the product mix containing said ether with water to remove unreacted alcohol whereby an ether product containing from 0.5 to 2.0 volume percent water is produced, blending said ether product with a composition consisting essentially of one or more paraffins containing from 5 to 10 carbon atoms to form a blend consisting principally of the ether and the paraffin which blend contains from 20 to 90 volume percent ether, maintaining said blend at from 30 to 150° F., permitting said blend to form two separate phases one of which consists essentially of water and the other which consists essentially of ether and paraffin from the water and recovering a blend of said ether and said paraffin containing a reduced amount of water which blend is then further blended with gasoline to form a gasoline containing up to about 10 volume percent of the ether.

3,846,089

MOTOR FUEL COMPOSITION

Warren H. Machleder, Bluebell, and Robert Kuhn, Lansdale, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 279,891, Aug. 11, 1972, now Patent No. 3,782,912. This application May 2, 1973, Ser. No. 356,655

Int. Cl. C10l *1/22*

U.S. Cl. 44—58 **29 Claims**

1. A multi-functional additive composition suitable for addition to distillate hydrocarbon fuels having a major proportion of a hydrocarbon base fuel distilling within the gasoline distillation range, the additive composition comprising a mixture of

(1) about 20 to about 250 parts by weight of a tertiary alkyl primary amine having a branched backbone and a total of 6 to 24 carbon atoms;

(2) about 5 to 100 parts by weight of a surface active alkyl ammonium carboxylate salt-ethoxylated alkyl phenol ester of a trimer or dimer acid;

(3) about 100 to 650 parts by weight of a polyester prepared from the reaction of a dimer or trimer acid and a mixture of an aliphatic alcohol having from about 1 to 24 carbon atoms and an alkoxylted alkyl phenol, said dimer and trimer acid having been produced by the polymerization of an unsaturated aliphatic monocarboxylic acid having between 16 and 18 carbon atoms.

3,846,090

CONTROL OF LIQUID DISSEMINATION

Desmond Wilfrid John Osmond, Windsor, and Norman Douglas Patrick Smith and Frederick Andrew Waite, Farnham, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 12, 1972, Ser. No. 252,755

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 **8 Claims**

1. A liquid hydrocarbon fuel of flash point at least 90° F. and suitable for use in gas turbined engined aircraft, having a reduced tendency to particulate dissemination on being subjected to shock the fuel containing dissolved therein polymer of molecular weight greater than 10^6 (viscosity average) or of intrinsic viscosity greater than 2.5 dls./gm. in a concentration such that there is molecular overlap of the polymer molecules in the liquid the polymer being an addition homopolymer of an alkyl styrene or an addition copolymer of an alkyl styrene with one or more ethylenically unsaturated non-polar monomers copolymerizable with said alkyl styrene.

3,846,091

POLYMER SOLUTION

Desmond Wilfrid John Osmond, Windsor, and Norman Douglas Patrick Smith and Frederick Andrew Waite, Farnham Common, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 12, 1972, Ser. No. 252,726

Claims priority, application Great Britain, May 13, 1971, 14,642/71

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 **6 Claims**

1. A liquid hydrocarbon fuel of flash point at least 90° F. suitable for use in gas turbine engined aircraft, and having a reduced tendency to particulate dissemination on being subjected to shock, the fuel containing therein polymer of molecular weight greater than 10^6 (viscosity average) or of intrinsic viscosity greater than 2.5 dls./gm. in a concentration such that there is molecular overlap

of the polymer molecules in the liquid, the dissolved polymer containing polar groups which form inter-molecular associative bonds arising from electrostatic attraction between polar and/or dipolar charges in the polar groups, the bonds being hydrogen or electrovalent bonds, the polymer being an addition copolymer of an alkyl styrene, the alkyl group in which contains from 3 to 20 carbon atoms.

3,846,092

CRUDE OILS AND FUEL OILS OF IMPROVED POUR POINT DEPRESSANT AND FLOWABILITY PROPERTIES

Peter G. Pappas, Downers Grove, Walter C. Edmisten, Olympia Fields, and Hobe Schroeder von Levern, Downers Grove, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Mar. 21, 1973, Ser. No. 343,286

Int. Cl. C10l *1/16*

U.S. Cl. 44—62 **8 Claims**

1. Petroleum crude oil and fuel oil compositions having improved pour and flowability characteristics at low temperatures, comprising a petroleum oil of the group consisting of a crude oil and a fuel oil normally having undesirable pour and flowability characteristics at low temperatures, and from about 0.001% to about 5% of a hydrolyzed copolymer of ethylene and a vinyl ester of a lower alkyl fatty acid having up to about five carbon atoms, said copolymer having an average molecular weight of from about 500 to about 30,000, and containing about 10–90% ethylene and about 90–10% of said vinyl ester, said copolymer being hydrolyzed to the extent of hydrolyzing from about 10% to about 90% of the ester units of said copolymer.

3,846,093

MIDDLE DISTILLATE FUEL CONTAINING ADDITIVE COMBINATION PROVIDING IMPROVED FILTERABILITY

Nicholas Feldman, Woodbridge, N.J., assignor to Exxon Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 157,615, June 28, 1971, which is a continuation-in-part of application Ser. No. 807,953, Mar. 17, 1969, now Patent No. 3,660,058. This application June 4, 1973, Ser. No. 366,538

Int. Cl. C10l *1/22*

U.S. Cl. 44—62 **10 Claims**

1. A petroleum distillate fuel having a boiling range within the limits of about 250° F. and about 700° F. which has been improved with respect to its low temperature flow properties by adding thereto:

(a) about 0.05 to 2.5 wt. percent of an essentially saturated amorphous normally solid petroleum hydrocarbon fraction having a melting point in the range of about 80° to 140° F. and a number average molecular weight within the range of about 475 to 3000, said hydrocarbon fraction being substantially free of normal paraffin hydrocarbons, and

(b) about 0.005 to 0.5 wt. percent of a fuel-soluble additive component selected from the group consisting of:

(i) a halogenated ethylene-containing polymer having a halogen content of from 1 to 40 wt. percent, and

(ii) a hydrocarbyl succinamic acid material of the formula:

$$R-\underset{\displaystyle CH_2-COX_3}{\overset{\displaystyle |}{CH}}-COX_3$$

wherein R is a straight chain aliphatic hydrocarbon having from 0 to 1 site of olefinic unsaturation of from 14 to 40 carbon atoms and attached at a secondary carbon atom to the succinyl group; one of X^2 and X^3 is —NYY^1, wherein Y and Y^1 are aliphatic hydrocarbyl groups of from 14 to 40 carbon atoms, the other of X^2 and X_3 is of the formula:

$$-OH(NHY^2Y^3)_n$$

wherein n varies from 0 to 1, Y^2 and Y^3 are hydrogen, aliphatic hydrocarbon of from 1 to 30 carbon atoms or oxyaliphatic hydrocarbon of from 1 to 30 carbon atoms, and may be taken together with the nitrogen to which they are attached to form a heterocyclic ring of from 5 to 7 annular members.

3,846,094

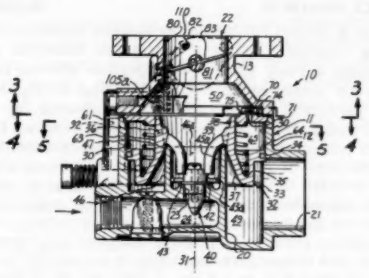
AIR-GAS MIXING DEVICE

Richard Baverstock, Long Beach, Calif., assignor to Impco Carburetion, Inc., Cerritos, Calif.

Filed July 25, 1972, Ser. No. 274,846

Int. Cl. F02m *21/00*

U.S. Cl. 48—180 C **17 Claims**



1. An air-gas mixing device comprising: a body having an internal cavity, an air inlet port, a mixture outlet port and a gas inlet port, said ports opening into said cavity; a gas supply conduit in communication with the gas inlet port; a cylindrical wall having a central axis and bounding a portion of said cavity; a piston having a pair of faces and making a fluid-sealing sliding fit with said cylindrical wall, and reciprocably movable therein; a metering sleeve; a metering surface on said metering sleeve, and a metering surface on said piston, said metering surfaces being so disposed and arranged relative to one another as to form a variable air orifice between them, the least clearance of which exists at a first piston position, the clearance increasing as the piston moves axially away from said first piston position, said cavity being divided at the said air orifice into an upstream air chamber and a downstretam mixture chamber, the gas inlet port opening into the said metering sleeve; a gas valve inlet seat surrounding said gas inlet port inside said metering sleeve, and lying in a plane normal to the axis of the cylindrical wall, and a gas valve inlet seal carried by the piston so disposed and arranged as to close the gas valve when the piston is in the said first position, and to open the gas valve when the piston is moved away from the said first position, the gas supply conduit discharging through the gas valve seat into the said metering sleeve and thence into the mixture chamber, the air inlet port opening into the air chamber, and

the mixture outlet port opening into the mixture chamber; bias means forcing the piston toward its said first position; an actuator chamber wall member extending across the cavity and facing one face of said pair of faces, said one face closer to the mixture chamber, the actuator chamber wall member having an opening therethrough; a sliding closure surface carried by the piston making a sliding fit in said opening, whereby the said closure surface, actuator chamber wall member, part of said cylindrical wall, and the said one face of the piston define in said cavity an actuator chamber which lies between the air chamber and the mixture chamber, the piston facing the actuator chamber at said one face, and the air chamber at the other face of said piston, the device having an actuator passage interconnecting the actuator chamber with the mixture chamber, the actuator chamber wall member shielding the said one face of the piston which faces toward the actuator chamber wall member from the direct blast of backfiring gases which may enter the mixture outlet port.

3,846,095

REDUCING GAS GENERATION

William B. Crouch, Whittier, Calif., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Apr. 30, 1973, Ser. No. 355,993

Int. Cl. C10j *1/00*

U.S. Cl. 48—196 R **16 Claims**

1. In a process for producing gaseous mixtures comprising principally hydrogen and carbon monoxide and containing a small amount of impurities selected from the group consisting of H_2O, CO_2, CH_4, A, N_2, H_2S, COS, particulate carbon, and mixtures thereof, by the partial oxidation of a hydrocarbonaceous fuel with a free-oxygen containing gas in the reaction zone of a free-flow gas generator at a temperature in the range of about 1500 to 3500° F. and a pressure in the range of about 1–350 atmospheres in the presence of a temperature moderator, the improvement comprising introducing into said reaction zone along with said reactants supplemental NH_3 as said temperature moderator in an amount in the range of about 0.01 to 1.5 lbs. of NH_3 per lb. of hydrocarbonaceous fuel, and wherein substantially no supplemental H_2O is introduced into said reaction zone other than that produced therein and that which may be initially present in the reactants as an impurity; wherein the gas stream leaving said reaction zone has a reducing ratio, i.e. mole ratio $(H_2+CO)/(H_2O+CO_2)$ of at least 10.0.

3,846,096

GASIFICATION OF CARBONACEOUS SOLIDS

George M. Mallan, Los Angeles, and Leslie E. Compton, Santa Barbara, Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of abandoned application Ser. No. 153,358, June 15, 1971. This application Oct. 19, 1972, Ser. No. 299,157

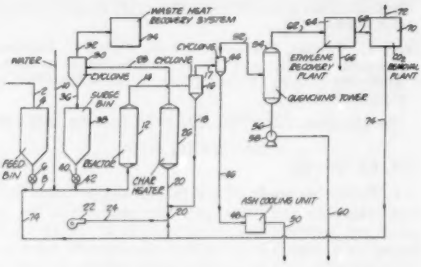
Int. Cl. C10j *3/16, 3/46*

U.S. Cl. 48—209 **16 Claims**

1. A process for producing gaseous hydrocarbons having from 1 to 7 carbon atoms from solid carbonaceous material comprising:

a. Forming a turbulent gaseous stream composed of carrier gas, water, char, and particulate carbonaceous solids, said solids having an individual maximum particle dimension of less than 1.0 inch, such that the solids and water are intimately admixed and entrained within the gaseous portion of the stream; said water being present in said stream in an amount which is at least 2.0 weight percent based upon the amount of carbonaceous solids in said stream; said carrier gas containing less than 1% by volume of oxygen;

b. Heating the components of said stream to a temperature ranging from between about 1200° F. and about 2500° F. in a pyrolysis zone for a predetermined residence time so that at least a portion of said carbonaceous solids are converted to gaseous hydrocarbons, containing from 1 to 7 carbon atoms, ethylene comprising at least 20% by volume of said gaseous hydrocarbons;



c. Removing the product stream from the pyrolysis zone;

d. Recovering the gaseous hydrocarbon products.

3,846,097

METHOD FOR PROCESSING GLASS AND FORMING FIBERS THEREFROM

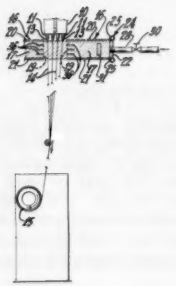
Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed July 24, 1972, Ser. No. 274,782

The term of this patent subsequent to July 11, 1989, has been disclaimed

Int. Cl. C03c *25/02*

U.S. Cl. 65—2 **13 Claims**



1. A method of forming glass fibers comprising:

feeding streams of heat-softened glass from a wall of a stream feeder;

forming the glass streams into fibers;

supplying to a region adjacent the wall a foam comprising a liquid phase and a gaseous phase; and

supplying a gas from the foam effective to establish an environment at the surface of the wall promoting separation of the molten glass from the surface to minimize wetting of such surface by the molten glass.

3,846,098

MANUFACTURE OF A WHITE PORCELAIN BODY OF HIGH TRANSLUCENCY AND HIGH STRENGTH

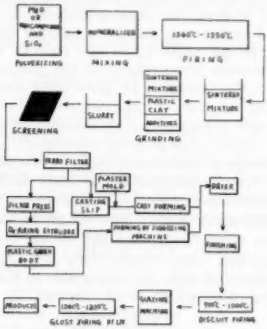
Tsuyoshi Nakashima, Nagoya, and Tsutomu Shibata, Hashima, Japan, assignors to Nippon Toki Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of abandoned application Ser. No. 16,969, Mar. 5, 1970. This application Mar. 10, 1972, Ser. No. 233,440

Claims priority, application Japan, Mar. 10, 1969, 44/18,214

Int. Cl. C03b *23/20, 29/00*

U.S. Cl. 65—18 **4 Claims**



1. In a method for manufacturing a hard porcelain article of high white translucency and high strength which comprises:

forming a plastic green body, firing to form a biscuit, glazing and glost firing said biscuit, the improvement which comprises forming said biscuit by:

a. pulverizing MgO or an Mg compound and SiO_2 so that more than 80% of the resultant mixture has a grain size of under 10μ, the ratio of MgO or Mg compound to SiO_2 being 40 parts by weight, as MgO, to 60 parts by weight SiO_2,

b. mixing the mixture of step a with 2 to 3% of Li_2CO_3, $BaCO_3$ or petalite as a mineralizer,

c. forming a sintered mixture of protoenstatite, clinoenstatite, forsterite and SiO_2 by sintering the mixture of step b at 1240° to 1350° C.,

d. mixing

(1) 10 to 18 wt. percent Gaerome clay

(2) 6 to 12 wt. percent Kaolin

(3) 0 to 3 wt. percent Feldspar

(4) 8 to 10 wt. percent Murakami clay

(5) 0 to 6 wt. percent Alumina

(6) 54 to 67 wt. percent of the sintered mixture of step c,

e. forming a slurry with the mixture of step d and water and milling said slurry to pulverize said mixture so that more than 80% of the particles thereof are under 10μ,

f. forming a plastic green body and drying said body to remove water therefrom, and

g. firing said body at 900–1000° C. to produce said biscuit.

3,846,099

GLASS-CERAMIC AND PROCESS THEREFOR

George A. Simmons, Toledo, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Original application June 17, 1966, Ser. No. 558,238, now abandoned. Divided and this application May 17, 1971, Ser. No. 144,316

The term of this patent subsequent to Mar. 3, 1989, has been disclaimed

Int. Cl. C03b *29/00*; C03c *21/00*

U.S. Cl. 65—30 **4 Claims**

1. A process of making an article having a main body portion of glass-ceramic and an integral surface layer of glass-ceramic and having a lower coefficient of linear expansion than that of the main body portion which comprises:

(1) forming an article from a thermally crystallizable glass containing lithia, alumina and silica in an overall composition, including nucleant, being capable of undergoing bulk crystallization to form upon bulk crystallize the glass to a glass-ceramic wherein β-β-spodumene as the predominant crystalline phase, and

(2) heat treating the glass article to thermally in situ crystallize the glass to a glass-ceramic wherein β-spodumene is the predominant crystalline phase,

(3) heating the surface layer of the glass-ceramic to an elevated temperature sufficiently high to convert the glass-ceramic of the surface layer of the article back to thermally crystallizable glass while maintaining the main body of the article as glass-ceramic, and

(4) heat treating the article to convert the glass of the surface layer to glass-ceramic containing β-eucryptite as the predominant crystalline phase and which have a lower expansion coefficient relative to the glass-ceramic of the main body portion,

whereby the article formed has a flexural strength greater than the initial article of glass-ceramic.

3,846,100

METHOD OF MAKING AN INDEX GRADIENT LIGHT-CONDUCTING GLASS STRUCTURE

Hiroyoshi Matsumura, Osaka, and Seiichi Ono, Itami, Japan, assignors to Nippon Selfoc Kabushiki Kaisha (also known as Nippon Selfoc Co. Ltd.), Tokyo-to, Japan

Original application Sept. 26, 1969, Ser. No. 861,247, now abandoned. Divided and this application July 6, 1971, Ser. No. 160,200

Claims priority, application Japan, Sept. 28, 1968, 43/70,467

Int. Cl. C03c *15/00, 25/02*; G02b *5/14*

U.S. Cl. 65—30 **10 Claims**

1. A method for producing an elongated light-conducting glass structure having a predetermined refractive index profile focusing effect and composed of an elongated glass body having a center axis and entrance and exit end surfaces for light, both transverse to said center axis, and a side surface encompassing said center axis, said glass body having a refractive index gradient wherein said refractive index gradient produces said focusing effect and is substantially expressed, at least in the vicinity of said center

axis in each planar cross-section perpendicular to said center axis, by the following equation

$$n=n_o[1-a(z)r^2] \quad (1)$$

wherein n_o represents the refractive index at said center axis, n represents the refractive index at a distance r from said center axis, and $a(z)$ is a positive constant at the planar cross-section, said positive constant being such that the value thereof increases gradually from at least one of said entrance and exit end surfaces toward an intermediate axial portion of the glass body along said center axis, which comprises: providing an elongated glass body composed of a glass having a uniform high refractive index containing first ions which are uniformly distributed throughout the glass body and are highly contributable to the refractive index of the glass body, said glass body having a circular cross-section of equal radius along the direction of its length; contacting said glass body at all side surfaces with an ion source containing second ions which are less contributable to the refractive index of said glass body than said first ions and which are mutually ion-exchangeable with said first ions in said glass body; maintaining said glass body in contact with said ion source at an elevated temperature and for a time period sufficient to effect diffusion of said first ions from said glass body to said ion source and diffusion of said second ions from said ion source to said glass body to thereby alter the uniform distribution in said glass body of said first ions such that the refractive index decreases from the original refractive index of said glass body to a greater extent at the portion of said glass body nearer

the surface of the glass body than at the center whereby said glass body has a refractive index gradient substantially expressed, at least in the vicinity of said center axis in each planar cross-section perpendicular to said center axis, by the following equation

$$n'=n_o'[1-a'r^2] \quad (2)$$

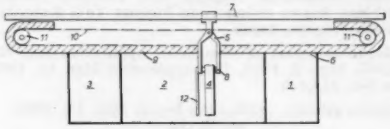
wherein n_o' represents the refractive index at said center axis, n' represents the refractive index at a distance r from said center axis, and a' is a positive constant at the planar cross-section, said positive constant a' and the refractive index n'_o at said center axis being constant respectively along the center axis of said glass body; and stretching the glass body in the direction of the center axis of said glass body while heating same in such a manner that the rate of stretching is lower in the vicinity of at least one of said entrance and exit end surfaces than at an intermediate axial portion of the glass body along said center axis so that the refractive index at both the center axis and the side surface of the glass body after stretching remains substantially the same as the refractive index before stretching; whereby the glass body after stretching has a cross-sectional radius which decreases gradually from at least one of said entrance and exit end surfaces toward the intermediate axial portion of the glass body along said center axis and said glass body has a refractive index gradient after stretching as shown by the aforesaid equation (1) and wherein said at least one of said entrance and exit end surfaces which has the largest cross-sectional radius of the glass body after stretching has the minimum value of $a(z)$

3,846,101

THERMALLY CRYSTALLIZING AN ARTICLE WHILE SUPPORTED IN VERTICAL ATTITUDE

Philip Hedley Gaskell, Preston, James Peter Loftus, Wigan, and Jane Greengrass, Ormskirk, England, assignors to Pilkington Brothers Limited, St. Helens, Lancashire, England

Filed Aug. 1, 1973, Ser. No. 384,471
Claims priority, application Great Britain, Aug. 10, 1972, 37,428/72
Int. Cl. C03b *29/00*
U.S. Cl. 65—33 **10 Claims**



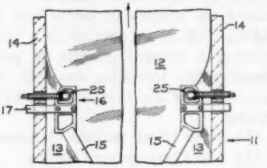
1. In a method of manufacturing a fine-grained glass ceramic article from a thermally-crystallizable vitreous material, wherein the vitreous material is shaped to form a shaped article, the article is initially heated to a temperature in the range T_g to $T_g+100°$ C. where T_g is the transformation temperature of the vitreous material, to condition the material, by generating therein a uniform dispersion of embryonic centers of incipient crystal growth, for subsequent crystallization, and the article is rapidly heated at a rate of at least 30° C. per minute to a predetermined crystallization temperature to effect fine-grained crystal growth on those embryonic centers, the improvement wherein the article is shaped into an article having a major axis or plane about which the article is symmetrical and the article is heated to said crystallisation temperature while the article is suspend ingly supported with said major axis or plan of symmetry, extending downwardly and disposed in a substantially vertical attitude, without support of the glass against deformation, the glass being sufficient fluid so that crystallisation takes place with stress relief.

3,846,102

APPARATUS AND METHOD FOR THE MANUFACTURE OF FLOAT GLASS HAVING A THICKNESS GREATER THAN EQUILIBRIUM THICKNESS

Robert B. Heithoff, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 17, 1973, Ser. No. 351,946
Int. Cl. C03b *18/02*
U.S. Cl. 65—65 A **4 Claims**



1. In an apparatus for manufacturing flat glass by the float method comprising an enclosed chamber defined by a bottom, roof and walls, said chamber having a bottom portion containing a bath of molten metal and an upper portion for enclosing an inert atmosphere over said molten metal; having an upstream end for receiving molten glass

onto said molten metal; having a downstream end containing means for removing a continuous ribbon of glass from said molten metal and having means therein for cooling and attenuating said molten glass to form said ribbon of glass while floating on said molten metal; wherein at its upstream end there is disposed a pair of restrictors in spaced relation, each extending downstream from the upstream end of said chamber, said pair, in combination, providing space for receiving said molten glass between them and for confining it between them on said molten metal while cooling it and drawing it along the surface of said molten metal; the improvement comprising, at the end of each restrictor, an extension tile comprising:

(a) a hollow body extending downstream from each of said restrictors a distance such that molten glass flowing from between said tiles is sufficiently fluid to spread, partially submerged in said molten metal; said body having a first substantially vertical face aligned substantially parallel to the axis of general glass movement through said chamber and a second substantially vertical face forming a corner of said body and extending substantially perpendicular to said first face; said body having at least one cavity therein with an upwardly facing open portion;

(b) fluid ballast at least partially filling said cavity; and

(c) means for extracting heat from said fluid ballast.

3,846,103

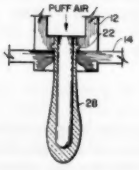
METHOD FOR MAKING GLASSWARE BY A PRESS AND BLOW TECHNIQUE

George E. Rowe, Wethersfield, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Original application Apr. 2, 1971, Ser. No. 130,732, now Patent No. 3,765,862. Divided and this application May 11, 1973, Ser. No. 359,481

Int. Cl. C03b *9/14*

U.S. Cl. 65—79 **4 Claims**



1. A method for forming a parison for narrow neck glassware with an upright body mold defining a relatively wide open top cavity and a neck mold defining a relatively narrow opening for determining the finish of the parison and for supporting it, said method comprising the steps of depositing a gob of molten glass in the body mold cavity, supporting the neck and body molds with their opening and cavity in vertically spaced alignment while closing an intermediate mold to define an opening between and matching the bottom of the neck mold opening and the top of the body mold cavity, thrusting a plunger through the neck and intermediate mold openings into the cavity to press molten glass upwardly into both said openings to provide an initial form for the parison, stripping the plunger and body mold from the parison by relative vertical movement upwardly and downwardly, respectively, permitting the parison to reheat while suspended from the neck mold and thus to stretch downwardly, and removing the intermediate mold at a selected point in time during reheat.

3,846,104

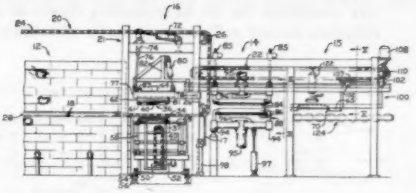
HANDLING GLASS SHEETS FOR SHAPING AND COOLING

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 10, 1973, Ser. No. 322,580

Int. Cl. C03b *23/02*

U.S. Cl. 65—104 **16 Claims**



1. In a method of handling a glass sheet comprising

(a) supporting said glass sheet while said sheet is at its deformation temperature between a lower shaping mold and an upper shaping mold having complementary shaping surfaces conforming to the shape desired for said glass sheet,

(b) lifting said lower shaping mold to engage said heated glass sheet along its lower surface until said engaged glass sheet is sandwiched between said lower shaping mold and said upper shaping mold, and

(c) supporting said glass sheet by vacuum against said upper shaping mold.

the improvement comprising

(1) retracting said lower shaping mold from said upper shaping mold while supporting said glass sheet by vacuum against said upper shaping mold,

(2) introducing means to support said glass sheet adjacent its marginal edge *only* to a position aligned immediately adjacent to and below said upper mold and above said lower mold,

(3) releasing said glass sheet from said upper mold with said glass sheet support means disposed therebeneath to deposit said glass sheet onto said glass sheet support means,

(4) transferring said glass sheet while on said glass sheet support means to a cooling station,

(5) immediately cooling said glass sheet with tempering medium while supported on said glass sheet support means at a rapid enough rate to impart at least a partial temper to the glass sheet, and

(6) removing said glass sheet from said glass sheet support means after said cooling.

3,846,105

METHOD OF CONTROLLING THE SHAPE OF THERMOPLASTIC, PRESS BENT SHEETS

Joseph R. Petrella, Irwin, John N. Shaw, Arnold, and Jacob R. Peternel, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 9, 1973, Ser. No. 358,760

Int. Cl. C03b *23/02*

U.S. Cl. 65—106 **13 Claims**

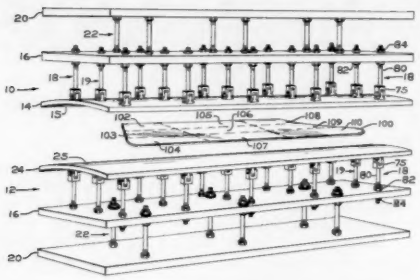
1. A method of controlling to within a desired tolerance the contour of a thermoplastic sheet shaped while heat-softened by press bending apparatus, comprising the steps of:

determining a radius of curvature for preselected regions of a shaped sheet from the coordinates of at least three points associated with at least one of said preselected regions,

establishing a reference radius of curvature for corresponding preselected regions and points associated with a reference surface;

comparing each said radius of curvature determined for said preselected regions with the radius of curvature established for corresponding regions of said reference surface,

selecting a region of said sheet whose radius of curvature so determined differs from the radius of curvature established for its corresponding region of said reference surface sufficiently to make adjustment of



the radius of curvature of said selected region desirable,

determining an adjustment to said press being apparatus which reduces the difference in radius of curvature for said selected region from that established for said corresponding region while simultaneously maintaining the contour of other regions of said sheet to within said desired tolerance,

adjusting said press bending apparatus according to said determination, and

shaping subsequent sheets by said adjusted press bending apparatus.

3,846,106

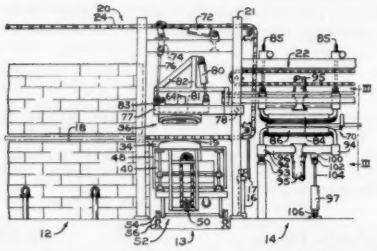
TEMPERING GLASS SHEETS

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 322,580, Jan. 10, 1973. This application Mar. 8, 1974, Ser. No. 449,298

Int. Cl. C03b *27/00*

U.S. Cl. 65—114 **7 Claims**



1. In apparatus for tempering glass sheets comprising means for supporting a heated glass sheet in a substantially horizontal disposition at a location in a cooling station, first means located above said location for delivering tempering medium under pressure toward the upper surface of said heated glass sheet, and second means located below said location for delivering tempering medium under pressure toward the lower surface of said heated glass sheet, the improvement comprising means for pivotally supporting said second tempering medium delivering means and means operatively connected to said second tempering medium delivering means to pivot said second tempering medium delivering means between a first position wherein the upper surface of said second tempering medium delivering means occupies a substantially horizontal orientation for delivering tempering medium against the lower surface of said heated glass sheet and a second position wherein said latter upper surface occupies an oblique orientation for removing glass fragments when a glass sheet is broken during the delivery of said tempering medium thereagainst.

3,846,107

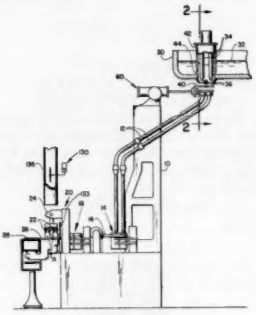
MEANS FOR AUTOMATICALLY REGULATING WEIGHT OF ARTICLES IN GLASSWARE FORMING MACHINE

Thomas Vincent Foster, Duncaster, England, and Eginhard Jaeger, Oetwil an der Limmat, Switzerland, assignors to Emhart Corporation, Bloomfield, Conn.

Filed July 26, 1972, Ser. No. 275,364

Int. Cl. C03b *5/26*

U.S. Cl. 65—164 **6 Claims**



1. In a glassware forming machine wherein gobs of molten glass are fed from a feeder into the upwardly open blank molds, and wherein the glassware articles are removed from the final forming station by a take-out mechanism for deposit on a cooled deadplate where they momentarily remain stationary prior to being swept off the deadplate onto a take-away conveyor, the improvement comprising, said feeder including a bowl with a lower outlet portion defined by an annular curb, and said feeder also including a refractory tube with its lower end located in spaced relation to the curb, and means for adjustably positioning said tube toward and away from said annular curb, said cooled deadplate having a plenum chamber therebelow which chamber normally communicates with a source of cooling air, valve means for selectively isolating said chamber from said source of cooling air, weighing means associated with said deadplate and including a perforated platform coextensive with said deadplate, said weighing means including a weigh cell for producing an output which is proportional to the weight of an article on said platform, controller means for said tube positioning means to raise the tube when said weigh cell output falls below a preset minimum and for lowering the tube when said output exceeds a preset minimum, and means for synchronizing said valve means to isolate said chamber and to operate said weigh cell only when an article is positioned on said platform.

3,846,108

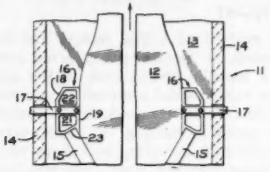
FLOAT GLASS BATH HAVING SUBMERGED EXTENSION TILES

Randal M. Smith, La Vale, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 17, 1973, Ser. No. 351,927

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **4 Claims**



1. In an apparatus for manufacturing flat glass by the float method comprising an enclosed chamber defined by a bottom, roof and walls, said chamber having a bottom portion containing a bath of molten metal and an upper portion for enclosing an inert atmosphere over said molten metal; having an upstream end for receiving molten glass onto said molten metal; having a downstream end containing means for removing a continuous ribbon of glass from said molten metal and having means therein for cooling and attenuating said molten glass to form said ribbon of glass while floating on said molten metal; wherein at its upstream end there is disposed a pair of restrictors in spaced relation, each extending downstream from the upstream end of said chamber, said pair, in combination, providing space for receiving said molten glass between them and for confining it between them on said molten metal while cooling it and drawing it along the surface of said molten metal; the improvement comprising, at the end of each restrictor, an extension tile comprising:

(a) a hollow body comprising a material which is buoyant in said molten metal and having a bottom and side walls; a portion of said side walls having a restrictor engaging shape and a portion of said side walls having a glass facing surface, said bottom and side walls forming at least one cavity, and said side walls terminating at the top of said extension tile so as to provide an opening for access to each said cavity for the introduction and removal of a ballast material so as to provide sufficient ballast to partially submerge said body in said molten metal, and

(b) a retaining means for holding said hollow body in engaging relationship to said restrictor with its glass facing surface in at least partial facing relationship to that of the other hollow body of said pair.

3,846,109

FLOAT GLASS BATH FENDER SUPPORTS

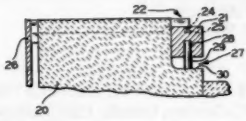
Eldwin C. Montgomery, Modesto, Calif., and Donald E. Shamp, Millbury, and Francis L. Swillinger, Perrysburg, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Aug. 21, 1972, Ser. No. 282,453

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **5 Claims**

1. In an elongated float glass bath for containing a body of molten metal upon which molten glass is deposited and formed into a continuous ribbon of glass, including a floor, longitudinally extending side walls, an independent fender unit to which glass will not stick extending along the inner face of at least a portion of one of said walls and spaced above said floor, and a hold-down bracket engaging said fender unit and restraining said fender unit against upward and lateral movement, the improvement comprising a frangible support member directly beneath said fender unit separate and independent from said fender unit and extending upwardly into engagement therewith, said



support member providing auxiliary support for said fender unit for holding said fender unit upwardly in engagement with said hold down bracket in the absence of buoyant support by said body of molten metal.

3,846,110

UNITS FOR SUSPENDING GLASS BETWEEN OPPOSED BENDING DIES

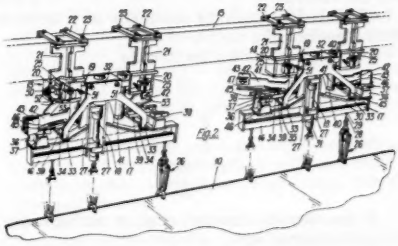
Patrick Burns, Cheylesmore, England, assignor to Triplex Safety Glass Company Limited, London, England

Filed Aug. 3, 1972, Ser. No. 277,524

Claims priority, application Great Britain, Aug. 11, 1971, 37,741/71

Int. Cl. C03b *23/02*

U.S. Cl. 65—273 **14 Claims**



1. A suspension unit for suspending a hot glass sheet during bending of the glass sheet between a pair horizontally acting bending dies, comprising a plurality of generally horizontal tong carrying arms each pivoted about a fixed vertical axis and a tong set carried by each arm at a point thereon spaced from the associated pivot axis, each arm being independently movable about its axis from an initial position of the glass sheet to a final bent position of the glass sheet between which positions said arms are swept through selected arcs, and a drive means for swinging each tong carrying arm about its associated pivot axis in response to movement of the bending dies as the bending dies bend the glass sheet, each said drive means engaging its associated tong carrying arm at a predetermined distance from said associated pivot axis to swing the arm through that arc necessary to maintain the tong set carried by such tong carrying arm above the upper edge of the glass sheet at it is bent.

3,846,111
ORGANIC FERTILIZER FOR PLANTS

Carlos Molini Mejia, Ext. Alhambra A-B 9, Ponce, Puerto Rico

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,269

Int. Cl. C05c 9/00

U.S. Cl. 71—28 **1 Claim**

1. An organic fertilizer composition comprising a mixture of the following ingredients in the specified proportions:

6 ounces of Low Biuret Urea
3 ounces of Vegetable Oil
6 ounces of Acetone
5 gallons of Water

3,846,112
PLANT GROWTH REGULATORS

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 2, 1970, Ser. No. 25,296, now Patent No. 3,701,799. Divided and this application May 15, 1972, Ser. No. 253,092

Int. Cl. A01n 9/20

U.S. Cl. 71—76 **7 Claims**

1. A plant growth regulatory composition comprising an effective amount of 2 - (N,N,N - Trimethylamino) ethyl-chrysanthemumate chloride and an inert carrier.

3,846,113
HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application Mar. 11, 1970, Ser. No. 18,713. Divided and this application July 13, 1972, Ser. No. 271,358

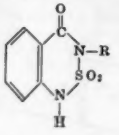
Claims priority, application Germany, Mar. 19, 1969, P 19 13 850.2

Int. Cl. A01n 9/22

U.S. Cl. 71—91 **6 Claims**

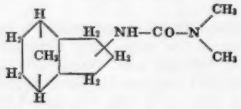
1. A herbicide consisting essentially of a herbicidally effective amount of a mixture of

(a) a compound having the formula



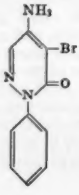
R denoting an isopropyl, ethyl or methyl radical or a salt thereof, and

(b) a compound having the formula



and

(c) a compound having the formula



in a weight ratio of a:b and a:c of 4:1 to 1:3, said mixture being dispersed in a carrier.

3,846,114
METHOD FOR KILLING MOSS

Werner Perkow, Hamburg, Germany, assignor to Norddeutsche Affinerie, Hamburg, and C. F. Spiess & Sohn, Kleinkarlbach, Germany

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,914

Int. Cl. A01n 9/20

U.S. Cl. 71—97 **3 Claims**

1. The method of killing mosses and the prevention of the growth of mosses in any given area comprising applying a biocidal composition to the area containing the mosses, said biocidal composition comprising a carrier and a biocidally effective amount of a compound selected from the group consisting of copper-ethylenediamine-pentachlorophenol complex, nickel-ethylenediamine-pentachlorophenol complex, zinc - ethylenediamine - pentachlorophenol complex, zinc-diethylenetriamine-pentachlorophenol complex, and mixtures of the foregoing.

3,846,115
HERBICIDAL COMPOSITION

Makoto Konnai, Hiroshi Kamata, and Masaru Kado, Shizuoka Prefecture, Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

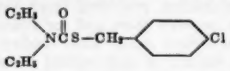
No Drawing. Original application Mar. 19, 1970, Ser. No. 19,546, now Patent No. 3,582,314. Divided and this application Mar. 12, 1971, Ser. No. 123,881

The term of this patent subsequent to June 1, 1988, has been disclaimed

Int. Cl. A01n 9/12

U.S. Cl. 71—100 **1 Claim**

1. A herbicidal composition comprising a herbicidally effective amount of a thiocarbamate of the formula:



and one or both of an agronomically acceptable carrier and a surfactant.

3,846,116
METHOD FOR TREATING A PEANUT CROP

Melton T. Pearson, Fulton, Tex., assignor to Standard Spray and Chemical Company, Lakeland, Fla.

No Drawing. Continuation of application Ser. No. 801,855, Feb. 24, 1969, which is a continuation-in-part of application Ser. No. 748,217, July 29, 1968, both now abandoned. This application May 29, 1973, Ser. No. 364,586

Int. Cl. A01n 5/00, 11/02

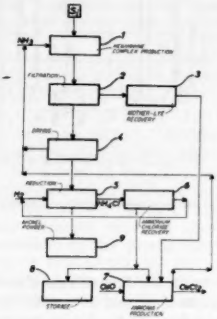
U.S. Cl. 71—65 **31 Claims**

1. In the method of treating a peanut plant by applying to the soil at the point of pegging, a layer of a calcium-containing compound, the improvement which comprises, the separate and additional application, but to the foliage of said peanut plant, of a composition consisting of, as an active ingredient, a calcium-containing compound having a particle size less than about 20 microns such that, upon the application of said active ingredient to the surfaces of the foliage of the peanut plant, said active ingredient is introduced into the structure of said plant, the combined application both to the soil and to the surfaces of the foliage of the peanut plant being in an amount and at a rate per acre of said crop sufficient to reduce the formation of peanut pops and unsound kernels in the peanuts yielded by said crop.

3,846,117
METHOD FOR PRODUCING HIGH-PURITY NICKEL POWDER WITH PREDETERMINED PHYSICAL CHARACTERISTICS

Louis Gandon and Serge Solar, Le Havre, France, assignors to Le Nickel, Paris, France

Filed Sept. 13, 1972, Ser. No. 288,882
Int. Cl. C22b *23/04*
U.S. Cl. 75—.5 AA **11 Claims**



1. A method for the production of high purity nickel powder having predetermined physical properties comprising reacting ammonia at a temperature between about 20 and 40° C. with nickel chloride in an aqueous solution containing at least 50 g./l. of nickel, separating the resulting precipitate of hexammine complex of nickel chloride, drying said precipitate at a temperature above 100° C. in order to at least partially convert it into a diammine complex of nickel chloride and to release ammonia, and reducing said diammine complex with hydrogen at a temperature between about 450 and 1,000° C.

3,846,118
PROCESS FOR MAKING SMALL PARTICLES

John E. Ehrreich, Wayland, and Adrian R. Retl, Cambridge, Mass., assignors to Graham Magnetics, Inc., Graham, Tex.

No Drawing. Original application Mar. 24, 1971, Ser. No. 127,850, now Patent No. 3,725,036. Divided and this application Mar. 21, 1973, Ser. No. 343,290
Int. Cl. B22f *9/00;* **H01f** *1/09, 1/10*
U.S. Cl. 75—.5 AA **6 Claims**

1. As a composition of matter, a mass of sub-micron particles of a normally pyrophoric metal having bonded to the surface thereof, a quantity of a silane passivating agent of a molecular weight below about 500 effective to reduce the pyrophoricity of said metal powder.

3,846,119
METHOD OF MELTING METALS WITH FLAMES

Frank S. Death and Andrew G. Szekely, Scotch Plains, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 784,334, Dec. 17, 1968. This application May 26, 1971, Ser. No. 147,227
Int. Cl. C21b *1/00*
U.S. Cl. 75—43 **10 Claims**

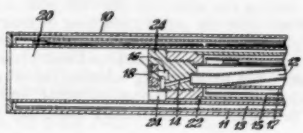
1. In a method of melting metal with an oxy-fuel flame, the improvement comprising increasing the melting rate of the metal while simultaneously preventing excessive oxidation of the metal by the steps of:

(1) providing a mixture of a liquid fuel and a solid powdered additive selected from the group consisting of lime, calcium carbide and mixtures thereof;

(2) feeding said fuel-additive mixture into a confined zone of a fluid-cooled burner under fluid pressure and providing it therein with a swirling motion;

(3) discharging the fuel-additive mixture from said confined zone into an enlarged confined combustion zone of said burner through an atomizing orifice;

(4) combusting said fuel-additive mixture with oxygen in said combustion zone thereby causing a flame;



and

(5) impinging said flame containing the additive against the surface of the metal thereby melting the metal while simultaneously preventing excessive oxidation thereof.

3,846,120
TREATMENT OF MOLTEN METAL

Reginald Mayorcas, Chester, and David Alec Hawkes, Guisborough, England, assignors to British Steel Corporation, and Spray Steelmaking Ltd., both of London, England

Filed Dec. 6, 1971, Ser. No. 205,254
Int. Cl. C21c *5/28*
U.S. Cl. 75—59 **12 Claims**

1. In a process for treating molten metallic material comprising the steps of:

(a) feeding untreated molten material at a predetermined flow rate to a reaction vessel as a freely-falling stream therein,

(b) determining the rate at which constituents to be removed from the molten material enter the reaction vessel as impurity contained in the untreated material,

(c) directing towards the freely-falling stream a gaseous flow which comprises an aggregation of a gas capable of reacting chemically with said impurity content of the untreated material in a quantity sufficient to remove said impurity content from said untreated material and an additional gas which is less chemically-reactive than the first-mentioned gas, at an aggregate flow rate which produces an energy transfer to the freely-falling stream sufficient to shatter said stream into a spray of particles having a predetermined particle size, and

(d) causing the reactive gas to mix intimately with said particles and to react chemically with said impurity content of said material to remove said impurity from said material,

the improvement which comprises the step of

(e) controlling the reactive potential of said gaseous flow by varying the proportion of reactive gas contained therein in accordance with said impurity content of the untreated molten material, while maintaining the aggregate gas flow at a rate which shatters the stream into particles having said predetermined median particle size.

3,846,121
METHOD FOR PREPARING SCANDIUM METAL

Frederick A. Schmidt and Oscar N. Carlson, Ames, Iowa, assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Continuation-in-part of abandoned application Ser. No. 323,184, Jan. 12, 1973. This application Apr. 10, 1974, Ser. No. 459,825
Int. Cl. C22b *61/00*
U.S. Cl. 75—62 **7 Claims**

1. A process for preparing high-purity scandium metal from scandium oxide comprising:

(a) firing the scandium oxide at 850 to 950° C. in air for about 4 to 6 hours, thereby driving off any

residual volatile materials and any carbon present in said oxide;

(b) heating the fired oxide to 650 to 750° C.;

(c) passing phosgene gas over the heated oxide, thereby chlorinating the oxide in a reducing atmosphere containing no free carbon to scandium chloride;

(d) mixing the scandium chloride with a member selected from the group consisting of magnesium, calcium and mixtures thereof to form a charge;

(e) heating the charge under reduced pressure to from about 800 to 1000° C., whereby the scandium chloride is reduced to scandium metal; and

(f) recovering the high-purity scandium metal.

3,846,122

ALUMINUM PURIFICATION PROCESS

Alex R. Valdo, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 26,751, Apr. 8, 1970. This application Aug. 2, 1971, Ser. No. 168,363

Int. Cl. C22b *21/06*

U.S. Cl. 75—68 C **2 Claims**

1. A process for preparing a purified aluminum, which process comprises the steps of:

decomposing an aluminum alkyl to deposit solid particles of metallic aluminum containing a significant amount of aluminum carbide, compacting those particles along with particles of solid flux into pellets for melting, the flux being an aluminum-treating flux that when molten is less dense than the molten aluminum but more dense than or about equal in density to the aluminum carbide contained in the molten aluminum,

melting the pellets to form a body of molten aluminum covered by a layer of molten flux,

bubbling a chlorine-containing gas through the body of molten aluminum to help remove the aluminum carbide from the aluminum and carry that carbide to the flux layer,

removing some of the purified aluminum and some of the carbide-containing flux thus produced, and using the remaining purified aluminum and remaining flux as a heel for the melting of additional pellets.

3,846,123

ALUMINUM RECOVERY FROM SCRAP MATERIALS

Bernard J. Racunas, New Kensington, and Noel Jarrett, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 28, 1972, Ser. No. 293,016

Int. Cl. C22b *7/00, 21/00*

U.S. Cl. 75—68 R **4 Claims**

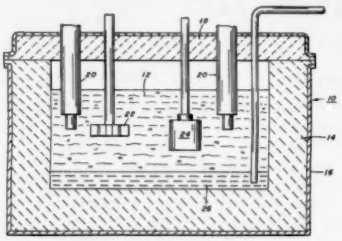
1. A method of recovering aluminum values from aluminum material fed to a pool of molten salt, the method comprising the steps of

(1) feeding aluminum materials into said pool,

(2) contacting the aluminum materials with said molten salt, the salt being effective to separate non-metallic solids from the aluminum material, and thereby release molten aluminum,

(3) removing molten aluminum from said pool of salt thereby substantially depleting the same of aluminum values while leaving it enriched with a suspension of non-metallic solids,

(4) circulating the salt enriched with non-metallic solids to maintain suspension of the same in said salt and to direct the suspension and salt to a device capable of collecting and thereby removing solids from said salt to substantially deplete the salt of said solids while the salt depleted of said solids is returned directly to the circulating salt from the device, and



(5) correlating the feeding of said aluminum materials with the removal of said non-metallic solids to maintain in said pool a solids content not exceeding 25 percent by weight of the salt therein.

3,846,124

METHOD OF INCREASING THE CYANIDATION RECOVERABILITY OF GOLD FROM ORGANIC CARBON-CONTAINING GOLD-BEARING ORES

Wilbur J. Guay, Newtown, Conn., assignor to Newmont Exploration Limited, Danbury, Conn.

No Drawing. Filed Oct. 3, 1969, Ser. No. 863,692

Int. Cl. C22b *11/08*

U.S. Cl. 75—112 **3 Claims**

1. The method of treating sedimentary gold-bearing ore containing indigenous organic carbonaceous material so as to increase the recoverability of its gold content by standard cyanidation extraction which comprises slurrying the ore with water in the absence of extraneous alkaline material, adjusting the temperature of the slurry to about 70° to 85° F., and dispersing chlorine gas throughout the slurry at a rate and for a period of time such as the slurry will continue to absorb the chlorine with evolution of carbon dioxide, nitrogen and oxygen as the chlorine reacts with the organic carbonaceous components of the ore and only until a significant amount of chlorine gas is liberated from the chlorinated slurry, and maintaining the temperature of the thus-chlorinated slurry within the range of about 70° to 85° F. for a period of about 6 to 12 hours with the resulting production of a slurry-solids content in which the gold component is amenable to at least 75 wt. percent extraction by standard cyanidation practice.

3,846,125

GOLD ALLOY COMPOSITION

Franklyn Stevens, Jr., Westport, Conn., assignor to Sigmund Cohn Corp., Mount Vernon, N.Y.

No Drawing. Filed July 21, 1972, Ser. No. 273,927

Int. Cl. C22c *5/00*

U.S. Cl. 75—165 **5 Claims**

1. An alloy composition consisting essentially of on a weight percentage basis: 7 to 8% vanadium, 5% iron and the balance of said composition being gold.

3,846,126

POWDER METALLURGY PRODUCTION OF HIGH PERFORMANCE ALLOYS

Edward M. Foley, Russiaville, and Dennis G. Dreyer and Herbert E. Rogers, Jr., Kokomo, Ind., assignors to Cabot Corporation

No Drawing. Filed Jan. 15, 1973, Ser. No. 323,502
Int. Cl. B22f 1/00
U.S. Cl. 75—211 12 Claims

1. The process of making a coherent green compact which holds its shape during sintering from pre-alloyed comminuted powder of a high performance metal alloy which cannot be pressure compacted under pressures up to 70 tons per square inch unless its average particle size is not greater than about 5 microns, comprising processing the alloy powder to an average particle size between about 9 and about 30 microns, mixing the alloy powder with a dry, finely divided organic binder in amounts not greater than about 5% by weight of the alloy powder so as to obtain a uniform dispersion of binder in the alloy powder, then adding a solvent for the binder in amount sufficient to form a plastic mixture with the alloy powder and binder, then consolidating the plastic mixture to a bulk density intermediate that of the powder and that of the cast alloy, then drying the consolidated mixture to evaporate the solvent, then crushing the consolidated mixture to discrete agglomerates of pre-alloyed powder particles to provide a substantial fraction of −100 mesh particles at least about half of the −100 mesh fraction of which are −325 mesh, then filling a die of the desired shape with those agglomerates, then compacting the agglomerates in the die under pressure to at least about 50% of the cast density of the alloy so as to produce a coherent green compact, and then removing the compact from the die.

3,846,127

IMAGING SYSTEM

Gedeminas J. Reinis, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,817
Int. Cl. G03c 5/10
U.S. Cl. 96—1 M 23 Claims

1. In an imaging method wherein a cohesively weak photoresponsive imaging layer comprising electrically photosensitive particles dispersed in an insulating binder is sandwiched between two sheets, then exposed to a pattern of actinic electromagnetic radiation and an electric field thereby providing upon separation of the sheets a positive image on one sheet and a negative image on the other, the improvement comprising:

treating the electrically photosensitive particles with from about 20% to about 200% by weight of said particles of a material selected from the group consisting of polyisobutenylsuccinic anhydride and polyisobutenylsuccinic anhydride derivatives prior to formation of said images.

3,846,128

PHOTOSENSITIVE ELEMENTS HAVING IMPROVED PROCESSING TEMPERATURE LATITUDE

Leo J. Thomas, Pittsford, and Robert J. Tulte, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 204,340, Dec. 2, 1971. This application Sept. 21, 1972, Ser. No. 291,114
Int. Cl. C03c 7/00, 5/54, 1/76, 3/00, 1/48, 1/40
U.S. Cl. 96—3 43 Claims

1. A photosensitive element comprising a support having thereon at least one photosensitive, image-recording, silver halide emulsion layer, said element containing an opposite-working silver halide emulsion layer for producing in direct proportion to its development, a diffusible development inhibitor to inhibit further development in said image-recording layer when both layers are developed simultaneously, said opposite-working silver halide emulsion layer and at least one of said image-recording silver halide emulsion layers having substantially the same sensitivity to actinic radiation within a particular spectral region.

3,846,129

DYE DIFFUSION TRANSFER COMPOSITIONS, ELEMENTS AND PROCESSES

Arthur D. Kuh, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 292,009
Int. Cl. G03c 1/40, 5/30, 5/54, 7/00
U.S. Cl. 96—3 10 Claims

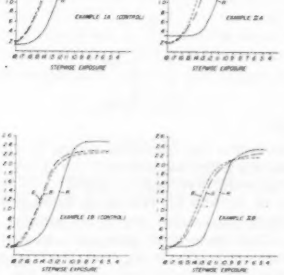
1. A color developing composition comprising an aqueous alkaline solution of (1) a phenylenediamine color developing agent, (2) a competing black and white developing agent, (3) a xylenediol, and (4) a thickening agent to impart a viscosity of about 100 to 200,000 cps. to said composition.

3,846,130

PROCESS FOR DEVELOPING PHOTOGRAPHIC ELEMENTS

Michael Dennis Purol and Richard Joseph Malloy, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1973, Ser. No. 361,925
Int. Cl. G03c 1/40, 7/00
U.S. Cl. 96—22 16 Claims



1. In a process of developing an imagewise-exposed photographic element comprising a support and at least one image dye-providing layer unit thereon which contains a light-sensitive silver halide emulsion having associated therewith a color coupler, which process includes (1) development of the imagewise-exposed silver halide emulsion to provide an imagewise distribution of metallic silver and inbibition of a color-developing agent in said photographic element, and then (2) contacting said photographic element with an amplifier composition which represses substantially additional net silver development, said amplifier solution containing a cobalt(III) metal complex having a coordination number of 6, and said amplifier solution being maintained in contact with said photographic element under conditions which reduce said cobalt(III) to cobalt(II) and in turn oxidize said color-developing agent to provide an increase in dye density with dye produced from said coupler in the areas corresponding to the imagewise distribution of said metallic silver, the improvement comprising including in said amplifier composition an Fe(III) chelate of an aminocarboxylic acid.

3,846,131

RECORDING MATERIAL CONTAINING A POLYHALOGENATED HYDROCARBON PHOTOACTIVATOR AND A DYE FORMING COMBINATION OF AN INDOLIZINE DERIVATIVE AND AN ALDEHYDE AND THE USE THEREOF

Joachim Werner Lohmann, Wilrijk, Hugo Karel Peeters, Mortsel, Renaat Andreas Ceulemans, Deurne, and Felix Jan Moelants, Wilrijk, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Oct. 19, 1972, Ser. No. 298,830
Claims priority, application Great Britain, Oct. 20, 1971, 48,804/71
Int. Cl. G03c 1/52, 5/24
U.S. Cl. 96—48 R 22 Claims

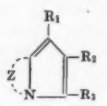
1. A photographic process for forming a visible image in a recording material which comprises in intimate admixture:

(1) at least one organic polyhalogen compound corresponding to the following general formula:

wherein:

each of A, B, X and Y is chlorine, bromine and iodine, or one of A, B, X or Y represents an alkyl group, an aryl group or an aroyl group and the others represent chlorine, bromine or iodine, or at least two of A, B, X or Y represent an aromatic acyl group and the others represent chlorine, bromine or iodine, and

(2) at least one indolizine derivative corresponding to the following general formula:



wherein:

Z represents the necessary atoms to close an adjacent pyridyl nucleus,

R_1 represents hydrogen or nitro,

each of R_2 and R_3 represents hydrogen, an alkyl group, an aralkyl group, an alkenyl group, an acyl group, a nitro group or a phenyl group, at least one of R_1 or R_3 being hydrogen, and

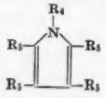
(3) at least one aldehyde compound of one of the following general formulae:

(a)

wherein:

Am represents a primary, secondary, or tertiary amino group,

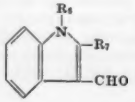
(b)



wherein:

one R_5 group is —CHO and each remaining R_5 and R_4 is hydrogen, an alkyl group, or a phenyl group,

(c)



wherein:

R_6 is an alkyl group and

R_7 is an alkyl group or a phenyl group,

(d) $ZO-(CH=CH)_n-Ald$

wherein:

Z is hydrogen, a metallic atom or an alkyl group,

n is an integer of at least one, and

Ald is —CHO or $-CH(OR_8)_2$ where R_8 is an alkyl group,

said visible image being formed by the steps of:

imagewise exposing the recording material to active electromagnetic radiation of a dose being sufficient to bring about a directly visible image, or by the steps of:

imagewise exposing the recording material to active electromagnetic radiation of a dose sufficient to create therein an at most barely visible image which has a spectral sensitivity in a wavelength range outside the inherent sensitivity range of the organic polyhalogen compound, and overall exposing the imagewise exposed recording material to heat or light within the wavelength range to which the initially exposed portions were made more sensitive than the initially non-exposed portions, to thereby increase the visibility of said image, or by the steps of:

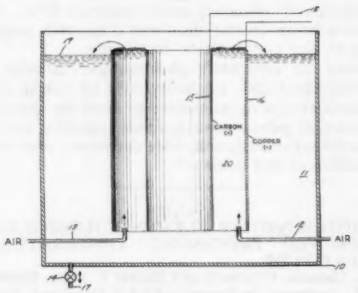
overall exposing the recording material to electromagnetic radiation of a dose sufficient to bring about in the recording material an increase in spectral sensitivity in a wavelength range outside the inherent sensitivity range of the polyhalogen compound, and imagewise exposing the overall exposed recording material within the wavelength range for which the overall exposed recording material was made more sensitive in order to form a visible image corresponding with said imagewise exposed portions.

3,846,132

BLEACH SYSTEM

Edward Palmonka, Elmont, N.Y., assignor to EBR Development Corp., New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,281
Int. Cl. B01k 1/00; G03c 5/32
U.S. Cl. 96—60 R 5 Claims



1. In an electrolytic process for regenerating a spent photographic bleach solution containing ferrocyanide to be converted to ferricyanide, the improvement which comprises establishing an annular zone between an inner positively charged electrode and an outer negatively charged electrode positioned within a reservoir of spent bleach solution, introducing sufficient air upwardly through said annular zone so as to create a circulation of spent solution undergoing regeneration between the electrodes and to dilute evolved hydrogen so as to safeguard against explosion.

3,846,133

MULTILAYERED COLOR PHOTOGRAPHIC MATERIAL WITH IMPROVED STABILITY UNDER TROPICAL CONDITIONS

Hugo Zorn, Munich-Lochhausen, Helmut Broll, Munich, and Erich Reckziegel, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 4, 1972, Ser. No. 294,955
Claims priority, application Germany, Oct. 6, 1971, P 21 49 837.3

Int. Cl. G03c *1/76, 3/00*
U.S. Cl. 96—74 **3 Claims**

1. A color-photographic multilayer material having compounds that produce a negative image by imagewise exposure followed by developing treatment or reversal treatment producing positive image comprising at least one red-sensitized silver halide emulsion layer containing a cyan-forming coupler, at least one green-sensitized silver halide emulsion layer containing a magenta-forming coupler and at least one blue-sensitive silver halide emulsion layer containing a yellow-forming coupler, wherein the improvement comprises at least one of the emulsion layers of the group consisting of green-sensitized and red-sensitized emulsion layers comprises in the same phase a binder, a silver iodobromide colloidal silver and the color coupler.

3,846,134

PHOTOGRAPHIC MATERIALS WITH REMOVABLE ANTIHALATION LAYERS

August Jean Van Paesschen, Antwerp, and Joseph Antoine Herbots, Edegem, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,647

Claims priority, application Great Britain, Oct. 20, 1970, 49,791/70

The term of this patent subsequent to Apr. 10, 1990, has been disclaimed

Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **4 Claims**

1. A photographic material comprising a hydrophobic film support, at least one light-sensitive silver halide emulsion layer, and at the side of the support opposite to said light-sensitive emulsion layer or layers an antihalation layer consisting of a dye or finely divided pigment dispersed in a water-insoluble, alkali-soluble polymer, characterized in that between said hydrophobic film support and said antihalation layer an intermediate layer is applied, which is formed from a mixture of 1 to 3 parts by weight of cellulose diacetate or triacetate and 3 to 1 parts by weight of an alkali-soluble polymer.

3,846,135

LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL WITH INCREASED SENSITIVITY TO LIGHT

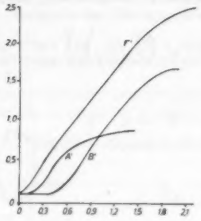
Erhard Hellmig, Leverkusen, Franz Moll, Cologne-Stammheim, August Randolph, Leverkusen, and Wilhelm Saleck, Schildgen, Bergische-Gladbach, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of abandoned application Ser. No. 634,507, Apr. 28, 1967. This application Apr. 2, 1971, Ser. No. 130,617

Claims priority, application Germany, May 12, 1966, A 52,455

Int. Cl. G03c *1/02, 1/08, 1/46*
U.S. Cl. 96—68 **3 Claims**

1. A light sensitive photographic material of improved speed and granularity essentially consisting of a support and in superposed relationship a first silver halide emulsion of silver bromide or silver bromo-iodide closer to the support and a second silver halide emulsion of silver bromide or silver bromo-iodide superposed over the first emulsion wherein the improvement comprises the second emulsion is in a layer having a thickness of at least 2μ and the first emulsion is in a layer having a thickness of between 5 and 15μ and is greater in thickness, the first emulsion has a sensitivity about 0.1 to 0.4 log *I.t* units less than the sensitivity of the second emulsion as measured by the points on the characteristic curves which



are above the exposure required to produce visible density, and which improvement results in the first emulsion giving a density of at least 1.5, the second emulsion giving a density of not over 0.9 and the slower emulsion having the threshold of its characteristic curve coinciding in log *I.t* units with the shoulder of the characteristic curve of the faster emulsion and whereby the overall sensitivity in log *I.t* units of said light sensitive material is greater than the sensitivity of the more sensitive second emulsion measured by the points on the characteristic curve above the exposure required to produce visible density.

3,846,136

CERTAIN ACTIVATOR-TONERS IN PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENTS, COMPOSITIONS AND PROCESSES

Michael F. Sullivan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

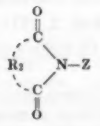
No Drawing. Filed May 1, 1970, Ser. No. 33,965

Int. Cl. G03c *1/02, 1/76*
U.S. Cl. 96—114.1 **22 Claims**

1. In a photothermographic element comprising a support, an oxidation-reduction image forming combination comprising a silver salt oxidizing agent with a reducing agent, photosensitive silver salt, a binder and an activator-toner agent, the improvement wherein said activator-toner agent is

(a) a 2-pyrazolin-5-one,

(b) a cyclic imide of the formula



wherein R_2 represents atoms completing a succinimido, 4-cyclohexane - 1,2 - dicarboximido, glutarimido or 2,4-thiazolidinedione nucleus; Z is hydrogen, hydroxy, silver mercury, potassium, sodium, lithium or gold, or

(c) a quinazolinone.

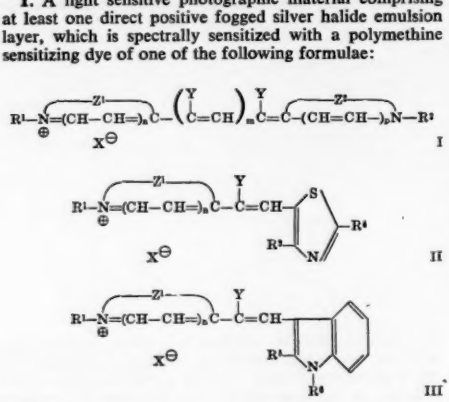
3,846,137

SPECTRALLY SENSITIZED DIRECT POSITIVE EMULSION

Oskar Riester, Leverkusen, and Hans Ohlschlager and Heinrich Odenwalder, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 23, 1972, Ser. No. 282,968
Claims priority, application Germany, Aug. 27, 1971, P 21 42 967.4
Int. Cl. G03c *1/16, 1/18*
U.S. Cl. 96—130 3 Claims

1. A light sensitive photographic material comprising at least one direct positive fogged silver halide emulsion layer, which is spectrally sensitized with a polymethine sensitizing dye of one of the following formulae:



I

II

III

wherein

Y=a cyano, nitro, acyl group or hydrogen, at least one of Y represents a cyano, nitro or acyl group;

R^1, R^2=a saturated or unsaturated aliphatic group or aryl;

R^3=hydrogen, a saturated or unsaturated aliphatic group or aryl;

R^4=SR^7 or NR^8R^9;

R^5=a phenyl group;

R^6=hydrogen, a saturated or unsaturated aliphatic group, aryl or alkoxy;

R^7, R^8, R^9=a saturated or unsaturated aliphatic group or phenyl;

n, *p*=0 or 1;

m=0, 1, 2 or 3;

X^-=any anion and

Z^1, Z^2 represent the ring members required for completing one of the following rings: thiazole, benzothiazole, oxazole, benzoxazole, thiazoline, indolenine, pyrimidone, thiopyrimidone, quinoline, benzseleneazole, oxadiazole, 1,8-naphthindole and imidazoquinoxaline.

3,846,138

ELECTROLESS COPPER PLATING

Michael Gulla, Newton, Mass., assignor to The Webline Corporation, Charlotte, N.C.

No Drawing. Filed Aug. 2, 1973, Ser. No. 385,186
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 8 Claims

1. In an electroless copper plating solution comprising a source of cupric ions, a reducing agent therefor, a complexing agent for said cupric ions and a pH adjustor to provide a minimum pH of at least 10, the improvement comprising a stabilizer for said solution selected from the group of iodobenzoic acid, amino methane sulfonic acid and mixtures thereof, said stabilizer being present in an amount sufficient to improve the stability of said copper plating solution.

3,846,139

TARNISH PREVENTIVE AGENT

Paul F. Warner, Borger, Tex., assignor to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 156,121, June 23, 1971, which is a continuation-in-part of application Ser. No. 723,287, Apr. 22, 1968, which in turn is a continuation-in-part of application Ser. No. 662,280, Aug. 22, 1967, all now abandoned. This application Nov. 22, 1971, Ser. No. 201,118
Int. Cl. C08h; C09d; C09g
U.S. Cl. 106—3 21 Claims

1. A silver and copper tarnish preventive and polishing composition comprising:

(a) at least one compound of the formula

HS—R—S—R'

wherein R is an alkylene group and R' is selected from alkyl, cycloaliphatic and alkaryl groups with the further proviso that the compound can have up to and including 35 carbon atoms, said compound being present in an amount from 1 to 50 percent by weight;

(b) an abrasive present in an amount from 5 to 98 percent by weight;

(c) a diluent present in an amount from 1 to 90 percent by weight;

(d) an odorizer present in an amount from 0 to 5 percent by weight; and

(e) a suspending agent in an amount from 0 to 1 percent by weight.

3,846,140

ELECTRICAL RESISTOR INKS

Karl J. Youtsey, Chicago, William C. Holt, Jr., Prospect Heights, and Robert D. Carnahan, Barrington, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Aug. 18, 1972, Ser. No. 281,880
Int. Cl. B44d *1/18;* C09d *11/00, 11/02, 11/16*
U.S. Cl. 106—20 12 Claims

1. In an electrical resistor ink comprising a resistive component dispersed in a liquid vehicle containing a binder of synthetic or natural resin and an oil, solvent or mixture thereof, the improvement which comprises utilizing as a resistive component therefor from about 10% to about 95% by weight of the composition of at least one pyropolymeric semi-conducting material present in particulate form and comprising a refractory inorganic oxide having a surface area of from 1 to about 500 square meters per gram with a monolayer of carbonaceous pyropolymer formed on the surface thereof, said pyropolymeric semi-conducting material being of a particle size of less than 20μ and having a resistivity at room temperature of from about 10° to 10^8 ohm-centimeters.

3,846,141

JET PRINTING INK COMPOSITION

Dale G. Ostergren, Evanston, and Daniel M. Zabiak, River Grove, Ill., assignors to A. B. Dick Company, Niles, Ill.

No Drawing. Continuation of abandoned application Ser. No. 95,953, Dec. 7, 1970. This application July 27, 1972, Ser. No. 275,572
Int. Cl. C09d *11/00*
U.S. Cl. 106—22 11 Claims

1. An ink composition consisting essentially of an aqueous solution of 0.5 to 7.0% by weight of a water-soluble direct dye and 5 to 40% by weight of a humectant system formed of a mixture of a lower alkoxy triglycol and at least one compound selected from the group consisting of a polyethylene glycol having an average molecular weight up to about 600, polypropyene glycol having an average molecular weight up to about 425, a lower alkyl ether of ethylene glycol and diethylene glycol, propylene glycol and glycerol, with the weight ratio of the alkoxy triglycol to said compound being within the range of 0.1 to 3.0, the

ink composition having a viscosity within the range of 1.0 to 10 centipoise at 25° C. and a specific resistivity less than 150 ohm-cm.

3,846,142

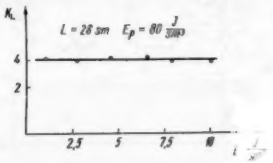
Nd AND Yb CONTAINING PHOSPHATE GLASSES FOR LASER USE

Igor Mikhailovich Buzhinsky, Pervomaiskaya ulitsa 5, kv. 46, Lytkarino Moskovskoi oblasti, U.S.S.R.; Valentin Pavlovich Gapontsev, ulitsa Godovikova 1, kv. 110; and Mark Efremovich Zhabotinsky, Pogodinskaya ulitsa 2/3, kv. 53, both of Moscow, U.S.S.R.; Anatoly Andreevich Izyneev, Vokzalnaya ulitsa 19, kv. 18, Fryazino Moskovskoi oblasti, U.S.S.R.; Elizaveta Ivanovna Koryagina, Oktyabraskaya ulitsa 15, kv. 31, Lytharino Moskovskoi oblasti, U.S.S.R.; Valery Borisovich Kravchenko, ulitsa Lenina 14, kv. 47, Fryazino Moskovskoi oblasti, U.S.S.R.; Jury Petrovich Rudnitsky, ulitsa Ostrovityanova 31, kv. 298; Evgeny Ivanovich Sverchkov, ulitsa Butyrsky val 32, kv. 61; and Nikolai Efimovich Alexeev, ulitsa Gorkogo 8, korpus 1, kv. 21, all of Moscow, U.S.S.R.; and Boris Leonidovich Davydov, ulitsa Nakhimova 17, kv. 63, Fryazino Moskovskoi Oblasti, U.S.S.R.

No Drawing. Filed Sept. 18, 1972, Ser. No. 290,146

Int. Cl. C03c *3/16, 3/30;* **C09k** *1/36*

U.S. Cl. 106—47 R **8 Claims**



1. A glass for laser use comprising the following components, in percent by weight: 40–90% of metaphosphates selected from the group consisting of Li, Na, K, Zn, Cd, Ba, Pb, Mg, Ca, and Sr; 5–50% of phosphates of elements selected from the group consisting of Al, Zr, B, and Ce; 1–7% of trivalent neodymium Nd^{3+}; and 0.3–5% of trivalent ytterbium Yb^{3+}, said glass having a thermal expansion coefficient in the range of $50–160\times10^{-7}$ 1/degree, a microhardness in the range of 300–450 kg./mm.^{2}, a quantum efficiency of transmission of $Nd^{3+}\rightarrow Yb^{3+}$ higher than 0.7, the section of stimulated emission of ytterbium at $\lambda=1060$ nm. being equal to about $2.5–5\times10^{-21}$ cm.^{2}, and a maximum inversion at electric energy of pumping of 80 joules/cm.^{3} is 1.5 to 2×10^{19} 1/cm.^{2}.

3,846,143

SOURCE COMPOSITION FOR ALKALI METAL OXIDES AND ALUMINUM OXIDE

William A. Mod and Donald L. Caldwell, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 724,621, Apr. 26, 1968. This application Mar. 25, 1971, Ser. No. 128,126

Int. Cl. C03b *1/00;* **C03c** *3/04*

U.S. Cl. 106—52 **7 Claims**

1. A method of making a glass batch to produce a glass product which comprises:

(a) preparing an aluminum-alkali metal complex as a source of the aluminum oxide and as at least a 50 percent source of the alkali metal oxide in the final glass product by reacting a mixture of an aluminum oxide source for glass making and an aqueous alkali metal hydroxide solution at a temperature at which the alkali metal hydroxide is liquid for a time sufficient to react essentially all of the aluminum oxide source to form an aluminum-alkali metal complex;

(b) drying said complex;

(c) admixing said complex with at least one glass former selected from the group consisting of silica and boric oxide sources and with an alkaline earth metal oxide source, the admixture having essentially no sodium sulfate added thereto, thereby obtaining a glass batch to be introduced into the glass melting furnace.

3,846,144

GUNABLE REFRACTORY COMPOSITION

Joseph R. Parsons, Park Forest, and Harold L. Rechter, Chicago, Ill., assignors to Chicago Fire Brick Company, Chicago, Ill.

No Drawing. Filed Oct. 25, 1973, Ser. No. 409,624

Int. Cl. C04b *35/52*

U.S. Cl. 106—56 **5 Claims**

1. A gunable refractory composition comprising the following materials in parts by weight:

Graphite or calcined coal	40–60
Bauxite	20–40
Silicon	8–20
Calcium aluminate	6–16
Calcium silicate	3–8

3,846,145

REFRACTORY ARTICLES FOR METAL POURING TUBES AND THE LIKE

Ned Wright Roudabush, Cincinnati, Ohio, assignor to The Chas. Taylor's Sons Company, Cincinnati, Ohio

No Drawing. Filed Sept. 17, 1973, Ser. No. 398,141

Int. Cl. C04b *35/16*

U.S. Cl. 106—57 **3 Claims**

1. Refractory composition useful for making metal pouring tubes and the like consisting essentially of from 45% to 75% of a fusion product, from 10% to 30% kyanite, from 3% to 15% zircon, from 3% to 12% calcined alumina and from 0.5% to 10% chromic oxide, said fusion product being a fused aggregate of substantially 0.5 to 1.5 parts of zircon for each part of alumina, said composition also containing in addition from 1% to 7% silica.

3,846,146

TRANSPARENT ARTICLES OF ALUMINUM OXIDE AND METHOD OF MANUFACTURING SAID ARTICLES

Bernardus Jacobus Hunting and Gerardus Alfonsus Jeunink, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,266

Claims priority, application Netherlands, Apr. 7, 1972, 7204638

Int. Cl. C04b *35/10*

U.S. Cl. 106—62 **6 Claims**

1. In a formed article consisting of magnesium oxide-containing and another metal oxide-containing transparent densely sintered polycrystalline aluminum oxide, the improvement comprising that the other metal oxide is calcium oxide and that the content of calcium oxide is 0.001–0.02% by weight.

3,846,147

STABLE SUSPENSIONS OF CALCINED CLAYS

Michael Tapper, Sandersville, Ga., assignor to Burgess Pigment Company, Sandersville, Ga.

No Drawing. Filed June 5, 1972, Ser. No. 259,978

Int. Cl. C09c *1/42;* **C08h** *17/06*

U.S. Cl. 106—288 B **14 Claims**

1. A calcined clay pigment suspension comprising at least 40% by weight of calcined clay in an aqueous medium and further comprising sufficient alkalizing agent both to impart a pH of at least 8 to said suspension and to stabilize said suspension and render it free of ap-

preciable settling of pigment, said alkalizing agent further providing said suspension with a pH sufficiently high to render such suspension pumpable.

3,846,148
NOVEL COMPOSITE PIGMENTS

John S. Nordyke, Pittsburgh, and William C. Spangenberg, Mount Lebanon, Pa., assignors to Hammond Lead Products, Inc., Hammond, Ind.

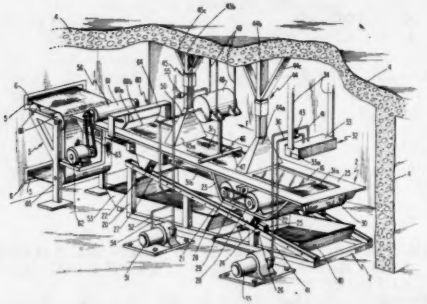
No Drawing. Continuation-in-part of abandoned application Ser. No. 182,241, Sept. 20, 1971. This application Aug. 31, 1972, Ser. No. 285,323
Int. Cl. C09c *1/28*
U.S. Cl. 106—308 B **23 Claims**

1. A composite pigment comprising finely divided particles of a silicate mineral pigment carrying on the surface thereof as a true coating at least one hydrous additive material in a substantially amorphous state, selected from the group consisting of a metal phosphate, phosphite, borate, borophosphate, borophosphite and chromate.

3,846,149
METHODS, MEANS AND COMPOSITIONS FOR PAINTING OBJECTS

Jean-Paul Meunier, Asnieres, France, assignor to Conservatome, Courbevoie, France

Filed June 12, 1970, Ser. No. 45,865
Claims priority, application France, June 13, 1969, 6919790; June 4, 1970, 7020492
Int. Cl. B44d *1/50*
U.S. Cl. 117—6 **16 Claims**



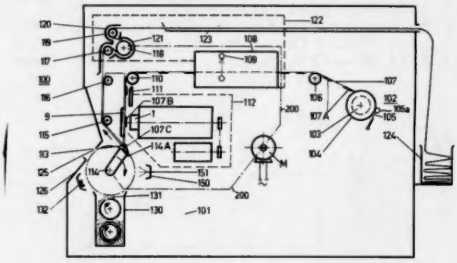
1. A method of painting an object which comprises applying thereto a fluid coating composition having a hardenable vehicle, solidifying the coating composition by exposing the coated object to ionizing radiation of solidifying duration and intensity, applying a liquid film transparent to ionizing radiation and impermeable to oxidizing gases to the coating composition, and applying ionizing radiation of hardening intensity through the said film to the coating composition until it is hardened.

3,846,150
METHOD FOR PRODUCING PRINTED MATTER CONTAINING IMAGES AND ALPHA-NUMERICAL CHARACTERS

Gabor Forgo, Erwin Meyer, and Karl Moser, Zurich, Switzerland, assignors to Zellweger AG, Uster, Switzerland

Filed July 14, 1972, Ser. No. 272,063
Claims priority, application Switzerland, Aug. 16, 1971, 12,107/71
Int. Cl. C03g *13/08, 13/22, 15/08, 15/22*
U.S. Cl. 117—17.5 **8 Claims**

1. A method of producing printed matter containing at least one coded image and at least one alpha-numerical character, comprising the steps of employing a carrier for the reception of latent electrostatic charge images, feeding such carrier in a predetermined direction of travel, forming on the carrier a latent electrostatic charge image corresponding to said coded image by applying voltage to predetermined individual electrodes of an electrode arrangement to produce an electrical discharge from said electrode arrangement to the carrier in order to form a latent electrostatic charge image characterizing at least part of said coded image and corresponding in structure to the electrodes impinged with voltage, and during at least part of the time when said latent electrostatic charge image characterizing at least part of said coded image is produced carrying out a change in the spacing between the electrode arrangement and the carrier in order to thereby improve the quality of the electrostatically printed coded image, and during at least part of the time when



the latent electrostatic charge image characterizing at least part of said coded image is produced carrying out a relative alternate movement between the electrode arrangement and the carrier in a direction substantially parallel to the plane of the carrier so as to produce the electrostatic charge image characterizing at least part of the coded image and having a size larger than the size of the end surfaces of the energized individual electrodes confronting the carrier from which said last-mentioned electrostatic charge image is produced, feeding the carrier bearing said latent electrostatic coded image past writing electrodes of an electrostatic writing mechanism, forming a latent electrostatic charge image corresponding to the desired alpha-numerical character on said carrier, and thereafter developing both of the formed latent electrostatic charge images with toner particles.

3,846,151
FIXING DEVICE

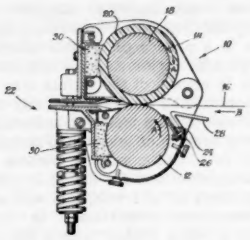
Jerome Roteman and Joseph K. Gogola, Solon, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Sept. 5, 1972, Ser. No. 285,981
Int. Cl. B44d *1/094;* **G03g** *13/20, 15/20*
U.S. Cl. 117—21 **8 Claims**

1. A method for reducing the tendency of a single sheet of a predetermined length of copy material having at least a residual high voltage charge thereon and of toner powder on said sheet of copy material to adhere to the surface of one of two rollers in pressure engagement at ambient temperature in a fixing device in a copy making apparatus for pressure fixing an image of an original formed of said toner powder comprising the steps of

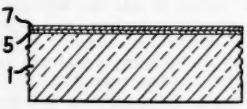
passing said sheet of copy material into the nip of said two rollers to pressure fix said toner powder,

applying a release agent to the surface of a first one of said two rollers, and



applying an anti-static agent to the surface of a second one of said two rollers.

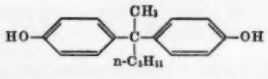
3,846,152
SELECTIVE REFLECTING METAL/METAL OXIDE COATINGS
Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 12, 1972, Ser. No. 252,803
Int. Cl. C03c *17/00;* **G02b** *5/20*
U.S. Cl. 117—33.3 **5 Claims**



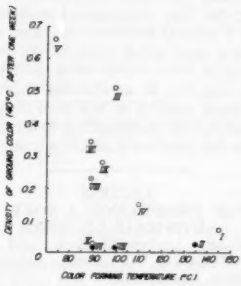
1. A transparent article of manufacture for the selective reflectance of radiation over an extended spectral range comprising, in combination:
(a) a glass substrate; and
(b) at least two coating layers affixed to at least one side of said glass substrate:
(1) a transparent metal coating layer consisting essentially of nickel substantially in its reduced metallic state affixed to a surface of said glass substrate; and
(2) a transparent metal oxide coating layer having a thickness of from about 50 to about 1500 angstroms consisting essentially of copper oxide affixed to said metal coating layer.

3,846,153
HEAT SENSITIVE COMPOSITION AND THERMAL RECORDING SHEET CONTAINING THE SAME
Kiyoshi Futaki, Isao Kohmura, and Kozo Haino, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed July 24, 1972, Ser. No. 274,618
Claims priority, application Japan, Aug. 5, 1971, 46/59,143
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.9 **5 Claims**

1. A thermal recording sheet which contains the phenol compound having the formula:



at least one ordinarily colorless or light-colored lactone compound capable of reacting with said phenol compound upon heating to form a color, and a binder, the proportions of phenol compound, lactone compound and binder being 1–30% by weight of the lactone compound, 45–

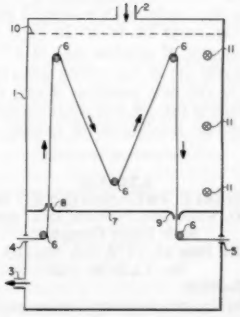


94% by weight of the phenol compound and 4–40% by weight of a binder, expressed by dry weight percentage.

3,846,154
PRODUCTION OF NUCLEAR FUEL
Raymond Léon René Lefevre, Broadstone England, assignor to United Kingdom Atomic Energy Authority, London, England
No Drawing. Filed Dec. 7, 1971, Ser. No. 205,733
Claims priority, application Great Britain, Dec. 23, 1970, 61,266/70
Int. Cl. C23c *11/10*
U.S. Cl. 117—46 CG **8 Claims**

1. A method of preparing nuclear fuel particles having kernels of oxide fuel, comprising the steps of pyrolytically depositing first, second and third coatings of carbon onto the oxide fuel kernels from hydrocarbon gas, the first coating being relatively thin and the second and third coatings relatively thick, the first and third coatings being of relatively high density and the second coating being of relatively low density and porous, the first coating being substantially impermeable to gases during the application of the second and third coatings.

3,846,155
FLAME RETARDANT PROCESS FOR CELLULOSICS
George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Apr. 17, 1972 Ser. No. 244,574
Int. Cl. B44d *1/44*
U.S. Cl. 117—62.2 **6 Claims**



1. A process for imparting flame retardant character to cellulose containing material which comprises

(1) impregnating a cellulose-containing material with an aqueous solution having a pH of from about 7 to about 9 and containing from about 10 to about 40 percent by weight of tetrakis(hydroxymethyl) phosphonium hydroxide compound;
(2) drying the thus impregnated material to about 0 to about 8 percent moisture retention, and
(3) exposing said dried material to an atmosphere containing at least about 50 percent by volume of gaseous ammonia in an enclosed chamber for a period of from about 5 to less than about 45 seconds to polymerize the phosphonium hydroxide compound in and on the cellulose containing material.

3,846,156
PROCESS FOR PRODUCING A SOFT, DRAPABLE ARTIFICIAL LEATHER

Gerhard Seibert, Aachen-Bildchen, and Hans-Jurgen Pitowski, Miltenberg, Germany, assignors to Akzo N.V., Arnhem, Netherlands

No Drawing. Filed May 3, 1972, Ser. No. 249,765
Claims priority, application Germany, May 11, 1971, P 21 23 198.1
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 **12 Claims**

1. In a process for producing an artificial leather by applying a polyurethane polymer solution in an organic solvent as a coating layer onto a textile substrate, bathing the coated layer with a nonsolvent for the polymer until the layer has coagulated and then washing and drying to obtain a porous elastomeric layer, the improvement which comprises:

carrying out said coating application with a solution of said polyurethane containing 10 to 30 parts by weight of polyurethane and 300 to 1500% by weight, with reference to the polyurethane, of sodium sulfate in 90 to 70 parts by weight of an organic solvent which is miscible with water and which is a nonsolvent for sodium sulfate, the viscosity of said solution being at least 20 poises, measured at 20° C.; and

subsequently washing out said solvent and said sodium sulfate from the coagulated layer and drying to form an elastomeric coating uniformly permeated with both micropores and macropores.

3,846,157
PROCESS FOR PRODUCING PEWTER EFFECTS

Ernst Halberstadt, Sunset Island, Onset, Mass. 02558

No Drawing. Filed May 8, 1972, Ser. No. 251,049
Int. Cl. B44c *1/20;* **B44d** *1/44*
U.S. Cl. 117—64 R **1 Claim**

1. The process of imparting a pewter-like surface to a base material which comprises mixing a coating of clear liquid lacquer-like binder with powdered graphite in proportions in the range of 13 to 26 parts by weight of binder to one part of graphite and in a relationship to produce free graphite in the coating when dried, applying the coating to the base material, drying the coating to leave free graphite therein, and polishing the coated material using the free graphite in the coating as a buffer.

3,846,158
FLUSHABLE, PRE-MOISTENED WIPERS

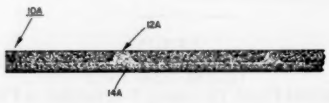
Kosta O. Vasilyadis, Newark, Del., assignor to Scott Paper Company

Filed June 15, 1972, Ser. No. 263,145
Int. Cl. B05c *9/04*
U.S. Cl. 117—68.5 **11 Claims**

1. A flushable, pre-moistened wiper capable of being packaged in a wet condition for a long period of time without disintegrating, said wiper comprising:

A. a web of soft, flexible, absorbent fibrous material having opposed major surfaces, said web including a fiber weight of at least 50% of short cellulosic fibers of a papermaking length less than ¼ inch;
B. two water-insoluble adhesive distributions associated with said web;

(1) one water-insoluble adhesive distribution being distributed over one major surface of the web in a pattern of discrete islands separated by corridor regions, said islands covering more than 50 percent of the surface area of said web and extending at least partially through the thickness of the web for enhancing the wet-tensile strength of said web to permit use of said web in a wet condition without mechanical disintegration and for aiding in stabilizing surface fibers of said web, said web mechanically disintegrating substantially in said corridor regions when flushed within the vortex of a conventional household toilet system; and



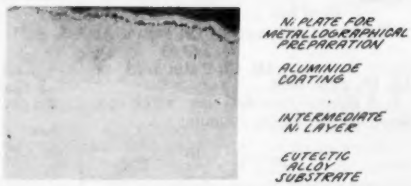
(2) the other water-insoluble adhesive distribution disposed uniformly over the planar extent of the web and associated with at least the other major surface of said web which is opposed to said one major surface, said other water-insoluble distribution extending at least partially through the thickness of said web and having a solids weight of no more than 5% based on the dry weight of the fibers in said web; whereby said other adhesive distribution aids in providing structural integrity to said web during use, permits mechanical distintegration of the web once said web is subjected to mechanical agitation of the type encountered in conventional household toilet systems, and stabilizes the fibers on at least said other major surface of said web to enhance the abrasion resistance of said other major surface; and

C. a moisture content in said web of from between about 100% and about 350% by weight based on the dry weight of the finished web.

3,846,159
EUTECTIC ALLOY COATING

Norman S. Bornstein, West Hartford, and Edwin H. Kraft, Hebron, Conn., assignors to United Aircraft Corporation East Hartford, Conn.

Filed Aug. 18, 1972, Ser. No. 281,868
Int. Cl. C23c *9/00, 17/00*
U.S. Cl. 117—71 M **16 Claims**



1. A method for depositing an oxidation erosion resistant coating on a nickel base directionally solidified

eutectic type alloy comprising, in sequence, the steps of:

depositing an intermediate coating layer of nickel, cobalt or nickel-cobalt alloy on said substrate;

diffusion heat treating the intermediate metal layer either separately or as part of the subsequent chromizing step to diffuse the intermediate metal into the eutectic alloy substrate;

chromizing the surface of the intermediate coating layer;

diffusion heat treating either separately or as part of the subsequent aluminizing step to establish a concentration gradient across the intermediate layer with the initial chromium content at the intermediate metal-eutectic interface not exceeding the maximum solubility of chromium in the eutectic phases;

aluminizing the surface of the chromium modified intermediate metal layer including a diffusion heat treatment at a temperature and for a time sufficient to effect an alloying reaction to form on an outer portion of said intermediate layer an outer layer of NiAl or CoAl substantially saturated with chromium and having any excess chromium precipitated therein.

3,846,160

PROCESS FOR ENHANCING THE ADHESION BETWEEN STEEL CORD AND A RUBBER COMPOUND

Hiroshi Hirakawa and Toshiyuki Sakai, Kanagawa-ken, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed June 23, 1972, Ser. No. 265,752

Int. Cl. B32b *15/06;* **B44d** *1/42*

U.S. Cl. 117—79 **5 Claims**

1. A process for manufacturing steel cord reinforced rubber comprising:

coating steel cord with a solution comprising a mineral oil and an organic acid salt of a higher aliphatic amine, said salt being present in an amount effective to promote adhesion between the steel cord and rubber;

forming a composite body of said coated steel cord and rubber; and

vulcanizing said composite.

3,846,161

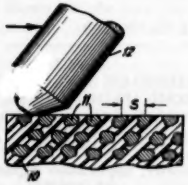
METHOD OF PRODUCING HARD TRANSPARENT SHEET-LIKE MATERIAL OR COATING

Alvin M. Marks, 100 Blair Road E., Oyster Bay Cove, N.Y. 11771

Original application Oct. 4, 1967, Ser. No. 672,903, now abandoned. Divided and this application July 14, 1971, Ser. No. 162,382

Int. Cl. C08f *3/30, 3/64;* **B44d** *5/00*

U.S. Cl. 117—93 **20 Claims**



1. In a method of producing a film, sheet or article of polymeric material having uniformly dispersed particles of hard material comprising the steps of

providing a fluid suspension of a polymeric material and hard particles corresponding to about 1 to 50% by volume of the suspension on the dry basis,

disposing said suspension in a predetermined configuration,

the improvement comprising rendering said film, sheet or article transparent by the steps of selecting hard particles having a hardness of at least 6 on the Moh's scale,

selecting said particles having a diameter ranging from 0.001 to 0.1 micron,

hardening said fluid suspension to form said transparent film, sheet or article,

whereby the average center to center distance between said particles is such that the ratio of the distance to the average diameter of the particles is over 1 and does not exceed 20.

3,846,162

METAL CARBONITRIDE COATINGS

John Allison Bloom, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

No Drawing. Filed Oct. 21, 1968, Ser. No. 769,385

Int. Cl. C23c *11/14, 13/00*

U.S. Cl. 117—106 R **4 Claims**

1. A process for coating a substrate with a solid solution carbonitride of a metal selected from silicon, boron, and the transition metals in Groups IVB, VB and VIB of the Periodic Table comprising:

heating said substrate to a temperature of 400° to 1200° C.; and

contacting the heated substrate, in the absence of halogen, with a vaporous organic compound having the generic formula $[(R)_2N]_nMe$ wherein Me is one of said metals, n is a valence of Me, and R is selected from hydrogen and hydrocarbon radicals having from 1 to about 18 carbon atoms, provided at least one R group is at least one of said hydrocarbon radicals.

3,846,163

METHOD OF MAKING ELASTOMER-BASED PRESSURE SENSITIVE ADHESIVE COATED ARTICLE

Donald O. Kest, 6258 Fairhaven Road, Mayfield Heights, Ohio 44124

No Drawing. Application May 17, 1971, Ser. No. 144,293, now Patent No. 3,743,616, which is a continuation-in-part of abandoned application Ser. No. 843,793, July 22, 1969. Divided and this application May 4, 1973, Ser. No. 357,082

Int. Cl. C09j *3/14, 3/16, 3/26*

U.S. Cl. 117—122 PA **22 Claims**

1. A process for making an elastomer-based, pressure sensitive adhesive coated article having an improved balance of physical and chemical properties including improved peel adhesion, tack and creep resistance together with the capability to selectively vary said characteristics, which comprises reacting

a reactive component having reactive functionality and which includes

a liquid diene telechelic polymer material having an average of at least about 1.6 essentially terminal, reactive functional groups per polymer molecule,

each of said essentially terminal functional groups being attached to one of the last three carbon atoms at an end of the polymer molecule with

a coreactive component having coreactive functionality capable of reacting with said reactive functionality and which includes

an organic coreactant material capable of coreacting with said reactive functional groups of said diene telechelic polymer material,

said coreactant material having an average number of coreactive functional groups greater than one,

said coreactive functional groups being reactive with with the reactive functional groups of the diene telechelic polymer material to increase the average mo-

lecular weight and modify the molecular structure of the diene telechelic polymer material,

the ratio of coreactive functional groups to reactive functional groups being in the range from about .75 to 1 to about 1.2 to 1,

in the presence of

a tackifying resin material,

to form an elastomer base material in the presence of said tackifying resin material,

said tackifying resin material being present in the amount of at least about 75 parts by weight of tackifying resin material per 100 parts by weight of said elastomer base material,

said tackifying resin material being sufficiently compatible with said elastomer base material that said tackifying resin material is soluble in said reactive component at 25° C.,

so that said tackifying resin renders said elastomer base material tacky,

the reacting of said reactive component with said coreactive component in the presence of said tackifying resin including the steps of mixing said reactive component with said coreactive component in the presence of said tackifying resin material to form a mixture, applying said mixture to a substrate, and then curing said mixture by heat in situ on said substrate.

3,846,164

METHODS OF MANUFACTURING POLYESTER RESINS IMPREGNATED FIBROUS COMPOSITIONS

Michel Lagache, Claude Ranson, and Nicole Tillon, Billancourt, France, assignors to Regie Nationale des Usines Renault, and Rhone Progil, both of Paris, France

Filed Apr. 20, 1972, Ser. No. 245,825
Claims priority, application France, Apr. 30, 1971, 7115551
Int. Cl. B32b *17/04;* **C08f** *21/00*
U.S. Cl. 117—126 GB **8 Claims**

1. A method of manufacturing fibrous compositions impregnated with synthetic resins comprising the steps of:

(a) impregnating from 10–70 parts by weight of reinforcing fibers with from 90–30 parts by weight of a polymerizable composition which has been prepared by

(b) mixing in parts by weight 100 parts of a polymerizable unsaturated polyester of a carboxylic acid, 0.5 to 2 parts of an initiator for the polymerization of said polyester, 0.5 to 4 parts of one or more alkaline earth metal oxides, 1 to 10 parts of a mineral or a compound comprising in its chemical structure water of crystallization and adapted to release the water of crystallization in the composition when the composition is heated; and

(c) heating the resulting impregnated product at a temperature of 50° to 100° C. for a period of 2–20 minutes.

3,846,165

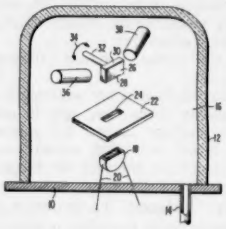
METHOD OF APPLYING AN ANTI-REFLECTIVE COATING ON A SEMICONDUCTOR LASER

Michael Ettenberg, Freehold, N.J., and Stephen Lee Gilbert, Newtown, Pa., assignors to RCA Corporation

Filed Aug. 21, 1972, Ser. No. 282,273
Int. Cl. H01l *7/00*
U.S. Cl. 117—201 **8 Claims**

1. In a method of applying an anti-reflective coating wherein the improvement comprises the steps of

coating an end surface of a semiconductor laser with an anti-reflective material in a manner so as to progressively increase the thickness of the layer of the material,



measuring the radiant energy output of the laser during the coating as the thickness of the coating increases, and

stopping the coating when a desired output is achieved.

3,846,166

METHOD OF PRODUCING MULTILAYER WIRING STRUCTURE OF INTEGRATED CIRCUIT

Atsushi Saiki, Tokyo, Takaaki Mori, Ome, Seiki Harada, Hachioji and Kikuji Sato, Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,570
Claims priority, application Japan, Sept. 25, 1971, 46/74,851
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **19 Claims**

1. A method of producing a multilayer wiring structure for an integrated circuit, comprising the steps of:

(a) forming a first wiring conductor layer of a predetermined pattern on the surface of a substrate;

(b) forming a resin layer on the resulting entire exposed area of said substrate and on said wiring conductor layer formed on said substrate;

(c) forming, on said resin layer, a metallic film which is selectively etched to form openings of a predetermined shape at predetermined positions for connection between the wiring conductor layers;

(d) providing openings at predetermined positions in said resin layer using said metallic film as a mask by physically etching said resin layer with a plasma discharge atmosphere, said openings reaching said wiring conductor layer located beneath said resin layer;

(e) removing said metallic film formed by the step (c) with an etchant; and

(f) forming a second wiring conductor layer of a predetermined pattern, which is electrically and mechanically connected with the exposed parts of said first wiring conductor layer partially exposed through the step (d) and which extends on said resin layer formed by the step (b).

3,846,167

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Hisayuki Higuchi, Kodaira, and Michiyoshi Maki, Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

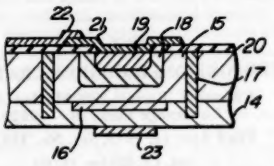
Filed Nov. 30, 1971, Ser. No. 203,384
Claims priority, application Japan, Dec. 4, 1970, 45/106,832
Int. Cl. B44d *1/14, 1/18*
U.S. Cl. 117—212 **14 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of

(a) providing a semiconductor substrate comprising at least one NPN transistor and an insulating layer having apertures for exposing part of the emitter region and base region of said transistor, respectively, said insulating layer covering said transistor,

(b) forming a metal layer on said exposed emitter region and on said exposed base region, respectively, and on at least a portion of said insulating layer adjacent said exposed regions, said metal layers being capable of being etched electrolytically,

(c) immersing said substrate and an electrode apart from each other in a solution capable of electrolytically etching said metal layer, and applying a predetermined magnitude of voltage between the collector of said transistor and said electrode for a predetermined period of time in such a direction as to maintain said collector positive with respect to said electrode, thereby accomplishing an electrolytic etching process, said voltage being relatively high but sufficiently low to apply to the PN junction between said collector and said base a voltage not exceeding the rated reverse breakdown voltage of said PN junction, said period of time being so long that said metal layers are electrolytically etched by a current which flows when said PN junction is ruptured by said applied voltage; whereby the metal layers on the emitter and the regions are retained or removed depending on whether said PN junction is capable of enduring said applied voltage.



(d) and forming on said insulating layer wiring conductor layers having a portion extending to a point where said wiring conductor layers are capable of connecting with the retained metal layers respectively on the base and emitter regions whereby the conductor layers are connected only with the base and emitter regions of the transistor whose PN junction between said collector and base regions is capable of enduring said rated reverse breakdown voltage.

3,846,168

METHOD OF FORMING BONDABLE SUBSTRATE SURFACES

Glenn V. Elmore, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed July 2, 1973, Ser. No. 376,195

Int. Cl. B44d *1/20;* **C23b** *5/62;* **C23f** *1/00*

U.S. Cl. 117—213 **11 Claims**

1. A method for preparing a printed circuit board with improved adhesion between the conductor metal and a nonconductive substrate comprising the steps of:

(a) precleaning a sheet of aluminum foil in a sodium hydroxide (NaOH) solution,

(b) rinsing the aluminum foil in water,

(c) treating the aluminum foil in a 50% solution of nitric acid (HNO_3),

(d) rinsing the aluminum foil in water,

(e) treating the aluminum foil in a solution of zinc oxide (ZnO), cupric oxide (CuO), and sodium hydroxide (NaOH),

(f) rinse in de-ionized water,

(g) dry the aluminum foil,

(h) laminate the treated aluminum foil to a dielectric substrate material,

(i) remove zinc and aluminum from the substrate by immersion in an etching bath,

(j) catalyze the substrate for electroless metal deposition, and

(k) electroless plate the catalyzed substrate with conductive metal to the desired thickness.

3,846,169

METHOD OF TREATING SEMICONDUCTOR MATERIALS CONSISTING OF III–V COMPOUNDS

Daniel Diguet and Loic Henry, Herouville-St.-Clair, France, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,423

Claims priority, application France, Aug. 18, 1971, 7130095

Int. Cl. C23b *5/62*

U.S. Cl. 117—213 **6 Claims**

1. In a method for making ohmic contact to the surface of a *p*-type III–V-compound semiconductor crystal wherein a contact metal is vapor-deposited onto the said surface to form a solid contact, the improvement comprising before vapor depositing the solid contact the said surface is brought into contact with liquid metal selected from the group consisting of gallium and mercury at a relatively lower temperature, next any liquid metal residue present is removed from the said surface, and thereafter the said solid contact metal is deposited on the said surface.

3,846,170

METHOD OF FORMING ELECTRICALLY INSULATING CHEMICAL CONVERSION COATING ON ALUMINUM WIRES

Kazuo Isawa, Masatsugu Maejima, Kuninosuke Kiuchi, Ken Yokota, and Masaru Ogawa, Tokyo, Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan

No Drawing. Filed Sept. 11 1972, Ser. No. 288,173

Claims priority, application Japan, July 7, 1972, 47/68,065

Int. Cl. B44d *1/18;* **C23f** *7/26*

U.S. Cl. 117—218 **7 Claims**

1. A method of forming an electrically insulating coating of alumina and chromium oxide on the surfaces of aluminum or aluminum alloy wires which comprises passing the wires of aluminum or an aluminum alloy through a chemical conversion treating solution held at 80 to 110° C. containing sodium carbonate and sodium chromate in a concentration of 20 to 200 grams per liter of water and in which the weight ratio of sodium carbonate to sodium chromate ranges from 10:5 to 10:10 to form an electrically insulating coating of alumina and chromium oxide on the wires.

3,846,171

GASEOUS DISCHARGE DEVICE

Bernard W. Byrum, Jr., Toledo, and Roger E. Ernsthausen, Luckey, Ohio, assignors to Owens-Illinois, Inc.

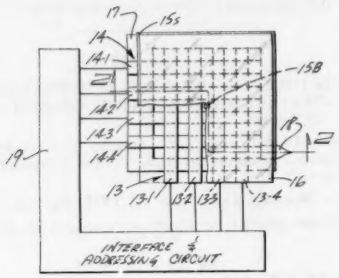
Continuation-in-part of abandoned application Ser. No. 76,229, Sept. 28, 1970. This application Oct. 26, 1972, Ser. No. 301,104

Int. Cl. H01j *17/04, 61/06*

U.S. Cl. 117—223 **21 Claims**

1. In a gaseous discharge display/memory device comprising an ionizable gaseous medium and at least one dielectric charge storage member in contact with the gaseous medium and at least one electrode insulated from the gaseous medium by a dielectric member, the improvement

wherein the portion of the dielectric member contacting the gaseous medium consists of at least one oxide of Be,



Ca, Sr, Ba, or Ra, in an amount sufficient to increase the uniformity of the operating voltages of the device.

3,846,172

ONE STEP METHOD FOR REMOVING WATER-INSOLUBLE COATINGS APPLIED TO A SUBSTRATE

Charles G. Fossati, 1175 Grayton, Grosse Pointe Park, Mich. 48224

No Drawing. Continuation-in-part of abandoned application Ser. No. 228,380, Feb. 22, 1972. This application Apr. 12, 1973, Ser. No. 350,401

Int. Cl. B08b *7/00*

U.S. Cl. 134—4 **37 Claims**

1. A method for removing a water insoluble coating from a substrate to which the coating is normally adherent which comprises:

(a) depositing on said substrate a barrier coating of a water soluble material;

(b) effecting the accumulation on said barrier coating of said water-insoluble coating;

(c) effecting the removal of said water-insoluble coating by subjecting said coated substrate to the action of an aqueous solution containing a water soluble barrier coating material which solution, upon subsequent drying, redeposits said water soluble barrier coating on said substrate, the temperature of said solution being in the range of about 170°–205° F. and the period of time of subjecting said substrate to said action being a time sufficient for the temperature of said substrate to approach that of said solution; and

(d) drying said substrate to effect said redeposition.

3,846,173

PROCESS FOR CLEANING OF OIL-LADEN METAL WASTE TO RECOVER THE METAL AND TO RECLAIM THE OIL

John Kenneth Ihrig, Glenwood, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 16, 1973, Ser. No. 342,014

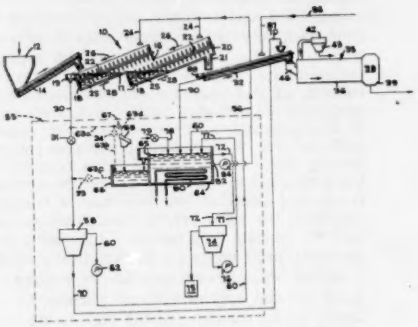
Int. Cl. B08b *3/08, 3/10;* **C23g** *1/36*

U.S. Cl. 134—10 **22 Claims**

1. A continuous non-batch process for cleaning oil-laden metal waste to recover the metal and to reclaim the oil carried by the metal waste, comprising the steps of:

(a) washing the metal waste with detergent, and effecting relative movement between the waste and the detergent to create a counter-current therebetween;

(b) separating oil and detergent from the wash residue to leave a sludge containing moisure and dirt particles;



(c) mixing the sludge with the washed metal waste; and

(d) drying the mixture of sludge and metal waste.

3,846,174

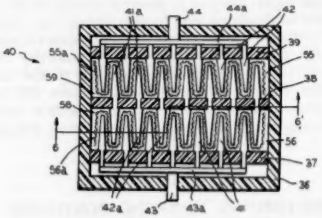
PROPORTIONED CURRENT BATTERY

Edward L. Barrett, 506 Malden Ave., La Grange Park, Ill. 60525

Filed Apr. 11, 1973, Ser. No. 350,009

Int. Cl. H01m *35/04*

U.S. Cl. 136—6 R **8 Claims**



1. An electrical battery comprising at least one cell including a plurality of positive plates interleaved one-for-one with a plurality of negative plates, with all plates immersed in an electrolyte, each plate having a current collection element at one end of the plate, and each plate being tapered in thickness from a thick portion adjacent the current collection element of the plate to a thin portion at the opposite end of the plate, the thin portion of each plate being aligned opposite the thick portion of each adjacent plate with the surface of each plate approximately parallel to the surface of each adjacent plate.

3,846,175

STORAGE BATTERY

Ramesh R. Desai, New Providence, N.J., assignor to Globe-Union Inc., Milwaukee, Wis.

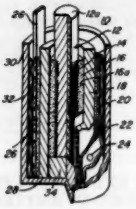
Filed Jan. 18, 1968, Ser. No. 698,782

Int. Cl. H01m *35/04*

U.S. Cl. 136—14 **9 Claims**

1. A substantially gas-tight maintenance-free cell comprising a sealed housing, a substantially cylindrical positive support disposed within said housing, said support

having undulations in the surface thereof to increase the surface area, porous positive active material formed as a cylinder surrounding said support and filling the undulations thereof, cylindrical porous separator material surrounding said positive material and having communicating interstices therein, a perforate, lead, substantially cylindrical negative support, porous negative active material on the surfaces of said negative support, said negative support and negative material surrounding said separator, said negative active material having electrical capacity



substantially in excess of the electrical capacity of said positive active material, electrolyte substantially filling the interstices in said separator material and said active materials, the radial thickness of said positive active material being sufficient to provide a layer of unoxidized material completely covering said positive support, irrespective of the state of charge of said battery, and spaced electrical terminals externally disposed in said housing and electrically communicating with said positive and negative supports, respectively.

3,846,176

FUEL CELL ENCASED IN MOLDED PLASTIC MATERIAL

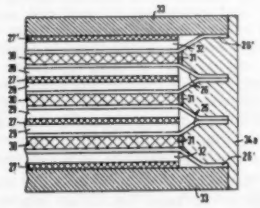
Dieter Kühl, Bubenreuth, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 19, 1970, Ser. No. 3,794

Claims priority, application Germany, Jan. 18, 1969, P 19 02 392.8

Int. Cl. H01m *27/00, 27/02*

U.S. Cl. 136—86 R **12 Claims**



1. Fuel cell comprising a substantially planar support frame forming a chamber for receiving liquid electrolyte therein and, superposed on each side of said support frame, a substantially planar diaphragm member, a substantially planar electrode, a substantially planar cover plate member, and a substantially planar spacer sandwiched between and completely covered by one of said diaphragm members and said cover plate member, said substantially planar spacer having voids therein thereby forming with said electrode and cover plate a chamber for receiving reactant gas therein, said diaphragm member having edges extending beyond the edges of the electrode and the spacer, a bonding agent cementing the edges of each of said diaphragm members to each other so as to enclose at least one of the chambers therewithin, a layer of additional bonding agent disposed across the edges of at least one of the other of said chambers for sealing the same, and a casing of molded plastic material surrounding the superposed components.

3,846,177

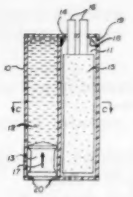
DEFERRED ACTION BATTERIES

Robert E. Mauch and Robert I. Sarbacher, Santa Monica, Calif., assignors to John C. Bogue, Santa Monica, Calif.

Continuation of application Ser. No. 257,643, May 30, 1972. This application Feb. 27, 1974, Ser. No. 446,481

Int. Cl. H01m *21/10*

U.S. Cl. 136—114 **15 Claims**



1. A reserve battery that remains in an inactive state until activated comprising:

(a) a battery case having an electrode compartment;

(b) battery electrodes housed in said electrode compartment;

(c) an electrolyte container;

(d) an electrolyte stored in said electrolyte container;

(e) means to attach said electrolyte container to said battery case;

(f) means to isolate said electrolyte from said electrodes when said electrolyte container is attached to said battery case to keep said reserve battery in said inactive state until activated;

(g) a first battery terminal formed by said battery case;

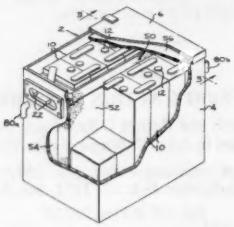
(h) a second battery terminal comprising a hollow member passing through one end of said battery case;

(i) means to insulate said hollow member from said battery case;

(j) a gas vent valve located in said battery case; and

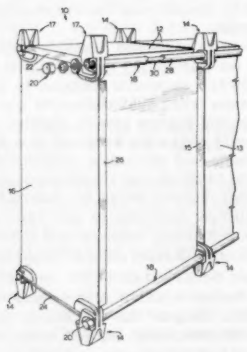
(k) means for transferring said electrolyte, under pressure, from said electrolyte container to said electrode compartment when said electrolyte container is attached to said battery case to thereby activate said battery, said electrolyte is stored in a frangible envelope inside said electrolyte container and wherein said means to attach said electrolyte container to said battery case includes means for removably attaching said electrolyte container to said battery case, said means for removably attaching said battery case comprises a hollow channel member extending from one end of said electrolyte container, said hollow channel member having a hollow tube passing therethrough and being so designed that said hollow channel member can be removably secured inside said hollow member of said battery case, said hollow tube extending into said battery case when said hollow channel member of said electrolyte container is secured inside said hollow member of said battery case.

3,846,178
SYSTEM FOR ABSORPTION OF EXPLOSIVE ENERGY BY PRESSURE MITIGATION
John M. Evjen, Gainesville, and Jerry Herrin, Alachua, Fla., assignors to General Electric Company
Filed May 30, 1972, Ser. No. 257,694
Int. Cl. H01m *1/04*
U.S. Cl. 136—166 **10 Claims**



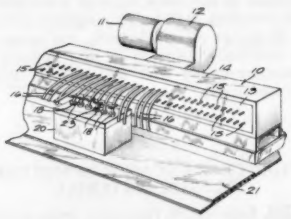
1. A system for absorbing excessive pressures resulting from explosive forces generated by exploding material comprising.
(a) a container;
(b) a housing disposed in said container and occupying a first volume;
(c) a source of explosive material disposed in said housing;
(d) a second unfilled volume within said container and exclusive of said first volume;
(e) a compressible closed-cell material occupying a third volume within said container and exclusive of said first and second volumes, said third volume being interfaced with said second volume;
(f) venting means in said housing for permitting transmission of said explosive material from first volume to said second volume.

3,846,179
BATTERY CELL SPACER
Frank Donald Shaw, Toronto, Ontario, Canada, assignor to Saft Batteries Limited, Toronto, Ontario, Canada
Filed Sept. 11, 1972, Ser. No. 287,696
Claims priority, application Canada, Aug. 16, 1972, 149,520
Int. Cl. H01m *1/04*
U.S. Cl. 136—171 **7 Claims**



1. For use in an assembly of spaced apart voltaic cells, each of said cells having vertically disposed front and side walls, where said front walls are substantially aligned relative to one another; a spacer comprising:
first and second body portions disposed along a longitudinal axis of said spacer;
two vertically disposed and parallel sides of said first body portion being substantially perpendicular to a first surface of said second body portion;
a second surface of said second body portion carrying at least one inclined raised surface extending towards said first body portion and ending before said first body portion in at least one third surface which is substantially perpendicular to said first surface and to said sides, and which extends beyond at least one side of said first body portion; and
a hole located outwardly of said first surface and passing through said first body portion substantially perpendicular to said sides.

3,846,180
PROCESS FOR REDUCTION OF PRESSURE BUILD-UP IN BATTERIES
Warren Ladd Towle, Milwaukee, Edward Norman Mrotek, Greendale, and Robert Roland Wiethaup, Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.
Filed June 14, 1972, Ser. No. 262,769
Int. Cl. H01m *1/08*
U.S. Cl. 136—176 **7 Claims**



1. A method of reducing pressure build-up in a fully charged battery capable of being activated by the addition of electrolyte which comprises a container having at least one cell compartment and at least one battery element composed of a plurality of positive and negative plates with separators disposed therebetween comprising install ing said battery elements into said cell compartment, adding forming acid electrolyte to said cell compartment, forming said battery element, removing from about 70 to about 97 weight percent of said forming electrolyte based on the total weight of the forming electrolyte in said battery after completion of the forming step, contacting said plates with a determined quantity of oxygen by forcing air into said cell compartment to cause said oxygen to react with the active material of the negative plate in an amount sufficient to cause neutralization of a substantial portion of the forming acid electrolyte and installing sealing means into said battery to prevent the further ingress of air into said cell compartment.

3,846,181
SEMICONDUCTOR WAFER STABILIZATION PROCESS AND STABILIZATION SOLUTION THEREFOR
Dervin L. Flowers, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.
No Drawing. Filed Oct. 23, 1973, Ser. No. 408,776
Int. Cl. H01l *7/34*
U.S. Cl. 148—1.5 **5 Claims**

1. In a process of manufacturing semiconductor devices which includes the steps of forming P-N junctions

in a surface of a semiconductor substrate which junctions extend to the surface of said substrate and covering said junctions with a passivation layer on the surface of said wafer, the improvement which comprises the step of coating the semiconductor device with a complex silicate solution containing 1 to 30 grams per liter phosphorous pentoxide, 1 to 60 grams per liter boric anhydride, .005 to 5.0 grams per liter vanadium oxide, 0.01 to 50 milliliters per liter tetraethylorthosilicate and the balance an organic solvent.

3,846,182

METHOD OF FORMING A HYDROPHILIC COATING OVER AN ALUMINUM SURFACE

John C. Huff, Detroit, Frank A. Ludwig, Farmington, and Arthur G. Smith, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed July 5, 1973, Ser. No. 376,763

Int. Cl. C23f *7/26*

U.S. Cl. 148—6.2 **6 Claims**

1. A method of forming a continuous, rough, porous and hydrophilic coating over a generally clean aluminum surface which comprises the steps of:

coating the aluminum surface by immersing it for a period of from 5 to 20 minutes in a first solution containing both an alkali metal carbonate and an alkali metal chromate or dichromate;

maintain said first solution at a temperature in the range of 170° F. to 210° F.;

maintaining the chromium to carbonate ratio of said first solution in a range from 0.05 to 0.5 during the treatment of said surface;

coating the aluminum surface treated by said first solution by immersing it for a period of 2 to 20 minutes in a second solution containing both an alkali metal oxide and silicon dioxide;

maintaining said second solution at a temperature in the range of from 160° F. to 210° F.; and

maintaining an alkali metal oxide to silicon dioxide ratio in said second solution in a range from 1:1.5 to 2:1 during treatment of said surface.

3,846,183

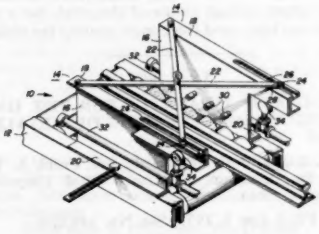
METHOD OF TREATING STEEL RAIL

Robert J. Henry, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed May 2, 1973, Ser. No. 356,535

Int. Cl. C21d *9/04*

U.S. Cl. 148—12 **9 Claims**



1. A method of treating a rolled steel railroad rail to improve its shelling resistance, comprising the steps of forming the said rail from a steel whose composition, by weight, comprises carbon between about 0.64 to 0.82%, manganese up to about 1.50%, phosphorus up to about 0.04%, sulfur up to about 0.05%, silicon up to about 1.25%, chromium up to about 2.5%, balance essentially iron, at a temperature above about 2000° F. and rapidly cooling said rail from a temperature above 1800° F. to at least a temperature between about 700 to 1000° F. at a rate sufficient to produce a fully pearlitic microstructure and an average pearlite spacing of less than about 1500 A.

3,846,184

WEAR RESISTANT STEEL

George F. Melloy, John Y. Riedel, and Paul P. Podgursky, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Continuation-in-part of application Ser. No. 753,167, Aug. 6, 1968, which is a continuation-in-part of application Ser. No. 628,887, Apr. 6, 1967, now abandoned. This application July 10, 1972, Ser. No. 270,389

Int. Cl. C04b *35/70;* **C22c** *39/14*

U.S. Cl. 148—36 **3 Claims**

1. A quenched and tempered ferrous die having improved wear resistance, as exemplified by a high resistance to scoring, checking and pick-up of the steel sheet and strip formed within said die, where said improved wear resistance is imparted by the presence of nitrides of titanium, columbium and/or zirconium, said die comprising a quenched and tempered ferrous alloy consisting essentially of, by weight, carbon between about 0.40 to 1.30%, manganese between about 0.10 to 3.00%, nitrogen between about 0.007 to 0.050%, about 0.02 to .25% total of at least one element selected from the group consisting of titanium, columbium and zirconium, with the balance essentially iron.

3,846,185

METHOD OF PRODUCING SEMI-HARD MAGNETIC Ni-Cu-Fe ALLOYS AND THE RESULTING PRODUCT

Yozo Nakajima and Shohei Ohtani, Sagamihara, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 855,117, Sept. 4, 1969. This application May 22, 1972, Ser. No. 255,723

Claims priority, application Japan, Sept. 11, 1968, 43/65,438

Int. Cl. H01f *1/00*

U.S. Cl. 148—120 **4 Claims**

1. A method of producing a semi-hard magnetic iron base alloy article comprising: providing an alloy body free of aluminum and titanium and consisting essentially of from 12 to 25% by weight of nickel, 3 to 20% by weight of copper and the remainder iron and small amounts of incidental impurities; annealing said alloy body at a temperature of from 500° to 650° C. for a time duration of from ½ to 6 hours; and cold working the annealed alloy body in a given direction sufficiently to reduce the area thereof from 10 to 80% to increase the residual magnetic flux density in said given direction of the cold-worked alloy body to at least about 10.5 kilogausses and establish therein a substantially rectangular hysteresis loop characteristic and impart thereto a coercive force of from 20 to 80 oersteds, and hardness not greater than 400 on the Vickers hardness scale.

3,846,186

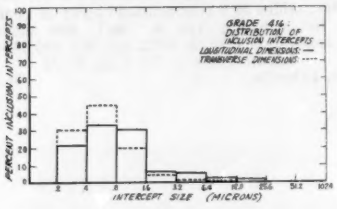
STAINLESS STEEL HAVING IMPROVED MACHINABILITY

Vijayakumar A. Tipnis, Parma, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Continuation of abandoned application Ser. No. 26,009, Apr. 6, 1970. This application Sept. 18, 1972, Ser. No. 289,589

Int. Cl. C22c *39/14, 39/26*

U.S. Cl. 148—37 7 Claims



1. Stainless steel which has been subjected to hot working to a thickness reduction of at least about 50% and which has improved machinability, said steel consisting essentially of: 0.01 to 1.2% carbon; 10 to27% Cr, 0 to 22% Ni, 0.3 to 10% Mn; 0.15 to 0.7% S and a total of 0.03 to 0.1% of element or elements selected from the class consisting of selenium and tellurium; balance iron and incidental impurities; said steel being characterized by absence of aluminum oxide above 0.002% of said oxide; and said steel being characterized by globular inclusions which are distributed throughout the steel in total quantity of 0.2 4% by volume and which are predominantly provided by and collectively contain Mn, S and said selected element or elements, the content of Mn in the steel being at least equal to 2.5 times the content of S, and the total of said selected element or elements being equal to at least 10% of the content of S.

3,846,187

SLAB AND PLATE COOLING METHOD FOR PRODUCING GRAIN ORIENTED ELECTRICAL STEEL

Akira Sakakura, Fumio Matsumoto, Kiyoshi Ueno, Kunihide Takashima, and Katuro Kuroki, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 20, 1972, Ser. No. 299,308

Claims priority, application Japan, Oct. 22, 1971, 46/83,736

Int. Cl. H01f *1/04*

U.S. Cl. 148—112 4 Claims

1. In a method for producing a high magnetic flux density, grain oriented electric steel sheet or strip of the type wherein a steel ingot produced by conventional methods is broken down into a slab, the slab is hot rolled to form a plate, the plate is cold rolled in at least one step including a final cold rolling at a reduction rate between 65 to 95% to form a sheet and the sheet is decarbonized and finally annealed at a temperature above 800° C., the improvement wherein the steel into consists essentially of not more than 4.0% Si, not more than 0.085% carbon, 0.010 to 0.065% acid soluble Al, and not more than 0.012% N, the slab is heated to above 1200° C. to dissolve the AlN and then hot rolled such that the slab is cooled to a temperature between 1000 to 1250° C. in less than 200 seconds from the time the slab is removed from the heating step, and the resulting plate is cooled from 1000–1250° C. to 600° C. in less than 200 seconds.

3,846,188

METHOD FOR STABILIZING TITANIUM ALLOYS AGAINST HYDROGEN PICKUP AND STABILIZED TITANIUM ALLOY PRODUCED THEREBY

Robert G. Werkema, St. Louis County, and Robert E. Newcomer, St. Louis, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

No Drawing. Filed June 9, 1972, Ser. No. 261,504

Int. Cl. C22f *1/18;* C23f *1/04*

U.S. Cl. 148—133 4 Claims

1. A titanium alloy capable of being chemically processed in a solution containing hydrogen ions without picking up an excessive quantity of hydrogen, said alloy consisting essentially of titanium, aluminum, vanadium and tin and being known as Ti-6Al-6V-2Sn, said alloy being in the beta or alpha-beta phases, said alloy having relatively low strength and high ductility as a result of having been annealed by heating to at least about 1300° F. but less than the solution treating temperature and by thereafter cooling relatively slowly, said alloy thereafter having been maintained between about 800° F. and about 1000° F. for at least approximately one hour to stabilize it against hydrogen pickup.

3,846,189

STAINLESS STEEL HAVING IMPROVED MACHINABILITY

Vijayakumar A. Tipnis, 10260 Pleasant Lake Blvd., Parma, Ohio 44130

Original application Apr. 6, 1970, Ser. No. 26,009, now abandoned. Divided and this application Sept. 18, 1972, Ser. No. 289,591

Int. Cl. C22c *37/00, 41/00*

U.S. Cl. 148—135 6 Claims

1. A method of making stainless steel of a martensitic grade to have improved machinability, comprising establishing a solidified stainless steel which is compositionally capable of transformation to martensite and which contains globular inclusions that are distributed therein and that comprise Mn, S and element or elements selected from the class consisting of selenium and tellurium, converting said steel to a shaped object, and thereafter treating said shaped object to characterize the steel thereof as capable of yielding short-breaking chips on machining, by heating the object to a temperature between the lower and upper critical points of the steel, for a period of at least one hour, and thereupon cooling the object.

3,846,190

METHOD AND APPARATUS FOR THE HIGH TEMPERATURE ANNEALING OF METALLIC COILS

Francis O. Raabe, Butler Township, and Frank A. Yossa, Butler, Pa., assignors to Armco Steel Corporation, Middletown, Ohio

Filed Apr. 9, 1973, Ser. No. 349,559

Int. Cl. C21d *1/00*

U.S. Cl. 148—155 2 Claims

1. A process for the high temperature annealing of silicon-iron strip having been processed to make cube-on-face silicon iron including the steps of providing said metallic strip with an alumina annealing separator, coiling said metallic strip, mounting said coil with its axis horizontally oriented within an annealing furnace and upon support means extending within the eye of said coil, said coil contacting only said support means within its eye and

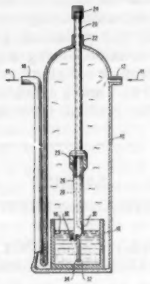
subjecting said coil to said high temperature anneal at a temperature of from about 1900° F. to about 2300° F. whereby to achieve said cube-on-face orientation.

3,846,191

LIQUID PHASE EPITAXY OF $Al_xGa_{1-x}As$

Joseph M. Blum, Yorktown Heights, and Kwang K. Shih, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,734
Int. Cl. H01l 7/38
U.S. Cl. 148—172 **6 Claims**



1. In a method for controlling the composition of a single crystalline ternary compound such as $Al_xGa_{1-x}As$ during liquid phase epitaxial growth comprising the steps of:

providing an equilibrium liquid solution at an elevated temperature consisting of the components of

$$Al_xGa_{1-x}As$$

with an n-type dopant therein;

providing a single crystalline solid substrate in said liquid in equilibrium with said liquid at said temperature;

cooling the system of said liquid and said solid at a uniform rate to a predetermined temperature to grow by liquid phase epitaxy a layer of said n-type conductivity;

heating said solution to a temperature sufficiently above said predetermined temperature and maintaining such elevated temperature for sufficient time so as to perform a remelting of a thin surface layer of the epitaxial overgrowth, and

uniformly cooling said melt to the vicinity of said predetermined temperature to regrow another thin layer of epitaxial overgrowth over that layer obtained during said heating step, whereby such regrowth layer is of the order of a fraction to five microns thick.

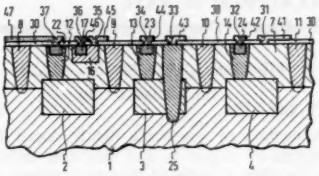
3,846,192

METHOD OF PRODUCING SCHOTTKY DIODES

Helmuth Murrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Erlangen, and Berlin, Germany

Filed Sept. 9, 1971, Ser. No. 178,964
Claims priority, application Germany, Sept. 10, 1970, P 20 44 863.9
Int. Cl. H01l 7/36, 29/48
U.S. Cl. 148—175 **3 Claims**

1. A method for producing high and low threshold Schottky diodes in an integrated circuit, comprising diffusing a plurality of n-conducting zones highly doped with one of the group including arsenic or antimony into a p-conductive semiconductor substrate, diffusing a phosphorous doped region into one of the zones, epitaxially precipitating a n-conducting semiconductor layer over the surface of the substrate into which the n-conducting zones have been diffused, diffusing the phosphorus doped region into the layer up to the surface of the layer and arranging a metal contact on the surface of the layer in contact with the phosphorous dopant in the layer diffusing through the layer a second phosphorus doped region down to said one zone and a third phosphorus doped region down to a second of the zones, diffusing respective highly



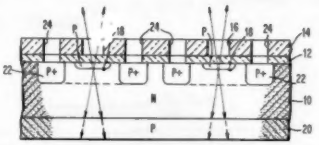
doped n-conductive regions into each of the second and third phosphorous doped regions, arranging respective metal contacts on the layer in contact with each of the n-conductive regions and arranging a metal contact on the layer above the second zone, the layer and the metal contacts arranged thereabove forming high and low threshold Schottky diodes and the metal contacts in contact with the n-conductive regions forming the other electrical connections of the respective Schottky diodes.

3,846,193

MINIMIZING CROSS-TALK IN L.E.D. ARRAYS

William N. Jacobus, Jr., Essex Junction, Vt., and San-Mei Ku, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 22, 1972, Ser. No. 265,122
Int. Cl. H01l 7/44
U.S. Cl. 148—187 **13 Claims**



1. A process for the forming of an array of closely spaced light emitting devices comprising the steps of:

providing a semiconductor substrate having two major surfaces and selected from the group consisting of III–V elements doped with an impurity of n-conductivity type;

depositing a first layer of a first material on a first major surface of said substrate, said material adhering well to the said first surface of said substrate, said material being substantially transparent to the diffusion of an impurity of a p-conductivity type;

depositing a second layer of a second material on said first layer, said material being substantially impervious to the diffusion of an impurity of the p-conductivity type;

forming windows in said second layer;
diffusing an impurity of the p-conductivity type through said windows in said second layer and through said first layer; and
forming a light absorbing background by diffusing an impurity of said p-conductivity type into the second surface of said substrate.

3,846,194

PROCESS FOR PRODUCING LIGHTLY DOPED P AND N-TYPE REGIONS OF SILICON ON AN INSULATING SUBSTRATE

David Joseph Dumin, Ringoes, N.J., assignor to Inselek Inc., Princeton, N.J.

Filed Jan. 5, 1973, Ser. No. 323,339

Int. Cl. H01l 7/36

U.S. Cl. 148—188 12 Claims

1. A method of producing lightly doped P and N-type regions of silicon on and insulating substrate comprising forming a layer of first type silicon on an insulating substrate, masking a portion of the surface of said layer, forming a layer of second type silicon containing a controlled amount of counterdopant on at least the unmasked portions of said layer of first type silicon, and heating the silicon layers to a temperature and for a time sufficient to drive a portion of the counterdopant into the unmasked region of the layer of first type silicon whereby a wafer is produced which has lightly doped regions of P conductivity and N conductivity and it can be used to make complementary types of PMOS and NMOS transistors.

3,846,195

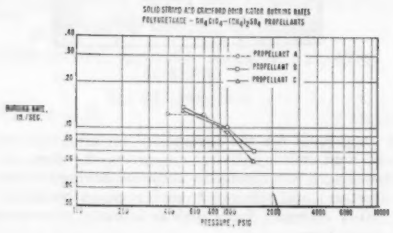
COMPOSITE POLYURETHANE PROPELLANTS WITH NEGATIVE PRESSURE EXPONENT OF AMMONIUM SULFATE

Gilbert A. Zimmerman, Sacramento, and Marshall L. Sherman, Fair Oaks, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Mar. 14, 1970, Ser. No. 25,606

Int. Cl. C06d 5/06; F02k 9/06

U.S. Cl. 149—19.4 8 Claims



1. A novel solid rocket propellant formulation comprising a cross-linked polyether or polyester polyurethane binder and ammonium perchlorate oxidizer; the improvement comprising the addition thereto of an effective negative pressure exponent producing amount of ammonium sulfate.

3,846,196

TECHNIQUE FOR SELECTIVE ETCHING OF GOLD AND ETCHANT THEREFOR

Donald Morley MacArthur, Berkeley Heights, and Peter Kenny Skurkiss, Bloomfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

No Drawing. Original application Sept. 1, 1972, Ser. No. 285,875, now Patent No. 3,816,317. Divided and this application Mar. 14, 1974, Ser. No. 451,014

Int. Cl. C23f 1/02

U.S. Cl. 156—8 4 Claims

1. A technique for the selective etching of gold in the presence of palladium which comprises immersing a structure including gold and palladium patterned with a resist in an etchant solution having a pH greater than 10 comprising a ferricyanide solution having a molarity within the range of 0.01 to 1 and a cyanide solution in a strong base having a molarity within the range of 0.01 to 0.5.

3,846,197

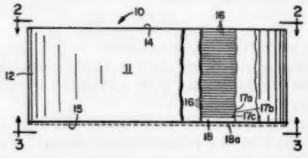
EXTRUSION DIE AND METHOD OF MAKING SAME

Robert F. Wiley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,508

Int. Cl. C03c 15/00

U.S. Cl. 156—11 5 Claims



1. The method of making an extrusion die for extrusion forming of a material into a cellular member or body to be subsequently used as a core member for a catalytic converter or the like, such method comprising;

(A) providing a multiplicity of relatively thin plates or disks of a selected size and of a glassy material, each such plate having planar opposite surfaces;

(B) selectively etching almost through one of said plates in the direction normal to said planar surfaces thereof and from one of such surfaces towards the other while leaving adjacent to and beneath such other planar surface a continuous substantially thin and planar support layer of the plate material and thereby providing, in such plate and extending in planes parallel with said planar surfaces, a relatively narrow curved channel preferably concentric and parallel with the outer perimeter of the plate and spaced therefrom a selected distance and a repetitive pattern of relatively narrow and short straight-line interconnecting and non-linearly continuous or coextensive channels, some of which connect with said curved channel and groups of six of which channels intersect each other at substantially equal angles on the order of about sixty degrees and provide a common center axis of intersection of the center lines of the six channels

of each said group of six channels with each such center axis being spaced substantially the same distance from the corresponding center axis of each of the similar adjoining groups of six channels, the walls of said pattern of channels being defined by the sidewalls of a multitude of closely and correspondingly spaced-apart columns having, where possible, corresponding planar cross-sectional geometric configurations generally those of rhombuses with acute oblique angles on the order of about sixty degrees;

(C) selectively etching completely through each of a succession of said multiplicity of plates and in the direction normal to said planar surfaces thereof a multiplicity of radiate passages having planar geometrically similar radiate configurations separated from each other and each having having six radials with the center axes of such passages in each of such succession of plates being equally spaced from the center axes of each of the adjoining passages in such plate a distance corresponding to the distance between said center axes of said adjoining groups of six channels in said one etched plate, and with said radiate passages in each succeeding one of said succession of plates being geometrically similar to such passages in any immediately preceding one of such succession of plates but having smaller dimensions in the direction of the planes of said planar surfaces of the plates;

(D) selectively etching completely through a plurality of remaining ones of said multiplicity of plates and in the direction normal to said planar surfaces thereof a multiplicity of circular passages each having a diameter substantially corresponding to the distance between the ends a pair of opposite ones of the radials of the largest ones of said radiate passages etched through said succession of plates and with the center axes of the circular passages through each of such plurality of plates equally spaced from the center axis of each of the adjoining passages in such plate a distance corresponding to the distance between said center axes of said adjoining radiate passages etched in said succession of plates;

(E) making a stack of said etched plates with the planar surfaces thereof abutting and with said center axes of the passages and channels etched therein generally axially aligned with each other, such stack comprising:

(I) said succession of plates in its successive order with the plate having the largest dimensional passages therethrough at a first end of such succession and the plate having the smallest dimensional passages therethrough at the second end of the succession;

(II) said plurality of plates with the planar surface of one of the end plates of such plurality remaining exposed and the planar surface of the other end plate of such plurality abutting against the planar surface of said plate at said first end of said succession of plates, and

(III) said one plate with said one etched planar surface thereof abutting against the planar surface of said plate at the second end of said succession of plates and said other planar surface of such one plate remaining exposed;

(F) heating said stack of plates to fuse all of the plates of such stack into a homogeneous unitary body and then permitting such body to cool; and

(G) grinding or abraiding said other planar surface of said one plate and through said continuous planar support layer adjacent to and beneath such other planar surface to remove such layer and expose said etched channels provided in such one plate and thereby complete the making of said extrusion die.

3,846,198

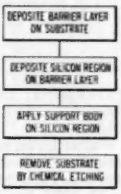
METHOD OF MAKING SEMICONDUCTOR DEVICES HAVING THIN ACTIVE REGIONS OF THE SEMICONDUCTOR MATERIAL

Cheng Paul Wen and Yuen-Sheng Chiang, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 293,804, Oct. 2, 1972. This application May 2, 1973, Ser. No. 356,322

Int. Cl. H01l 7/50

U.S. Cl. 156—17 **9 Claims**


DEPOSITE BARRIER LAYER ON SUBSTRATE
DEPOSITE SILICON REGION ON BARRIER LAYER
APPLY SUPPORT BODY ON SILICON REGION
REMOVE SUBSTRATE BY CHEMICAL ETCHING

1. A method of making a semiconductor device comprising the steps of:

(a) forming on a surface of a substrate of single crystalline silicon a thin barrier layer of single crystalline P type conductivity silicon with the free carrier concentration being greater than 5×10^{19} cm.$^{-3}$,

(b) forming on said barrier layer a region of single crystalline silicon, said region being of a conductivity type or types required by the semiconductor device being formed, and

(c) removing said substrate by etching with a solution of potassium hydroxide and 1-propanol.

3,846,199

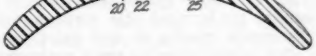
ARTIFICIAL EYE AND METHOD OF CONSTRUCTION

Quido A. Cappelli, Bronx, Calif., assignor to Danker & Wohlk, Inc., Uniondale, N.Y.

Original application June 3, 1971, Ser. No. 149,535, now abandoned. Divided and this application Oct. 25, 1972, Ser. No. 300,570

Int. Cl. B44d 5/06

U.S. Cl. 156—61 **1 Claim**



1. A method of forming an artificial eye to match in color, configuration and depth effect a good eye of a patient comprising:

viewing the patient's good eye;

selecting from a group of transparent plastic discs a plurality of discs each having a top surface prepainted with a different color and design corresponding to colors and designs commonly found in the iris of the human eye, it being believed that an overlay combination of such selected discs will closely match the iris of the good eye in color, design configuration and depth effect;

covering said top surface of each selected disc with a liquid having an index of refraction substantially

corresponding to the plastic material forming said disc;

stacking said discs one atop the other and viewing said stack of discs through the top of a transparent plastic dome to check the appearance of the iris formed by an overlay combination of said selected discs so that one or more of said discs may be replaced if necessary to produce the desired effect prior to a fusing of said discs;

simultaneously subjecting said discs to heat and pressure to fuse them together in and to a cavity in a bottom of a transparent plastic dome to simulate the cornea and iris of an eye; and

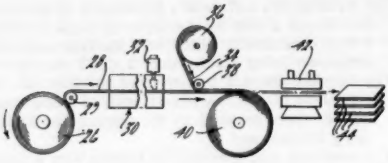
casting said dome in the top of a sclera-shaped plastic base.

3,846,200

DECORATIVE COVERING AND METHOD FOR APPLYING DECORATIVE COVERING TO VEHICLE PANELS

Ralph G. Doerfling, Walled Lake, and Charles J. Motycka, Detroit, Mich., assignors to Detroit Gasket and Manufacturing Company, Oak Park, Mich.

Filed May 22, 1972, Ser. No. 255,797
Int. Cl. B29c *3/00*
U.S. Cl. 156—85 **7 Claims**



1. A process for applying a decorative plastic sheet on convex exterior vehicle panels comprising the steps of applying a heat-activatable adhesive film over substantially the entire undersurface of a heat-softenable decorative sheet, affixing strips of fastening means along at least a portion of the edges of said sheet to facilitate a securing of the terminal edge portions thereof against movement relative to a vehicle panel, heating said sheet to an elevated temperature at which said sheet is plastically deformable, stretching the heated said sheet to impart a contour therein of a magnitude in excess of the panel over which said sheet is applied, cooling the stretched said sheet to a temperature below the heat softening range thereof and in a manner to retain at least a portion of the excess of said contour therein and a memory of the original non-stretched configuration thereof, placing the contoured said sheet with said adhesive film positioned in overlying relationship against the surface of a vehicle panel, securing the terminal edge portions of said sheet against movement relative to said panel, heating said sheet to effect a heat softening and a contraction of said sheet in response to its memory into smooth and taut overlying relationship on said panel, continuing the heating of said sheet to effect an activation of said adhesive film and a bonding of said sheet to said panel, and thereafter cooling said sheet and said film.

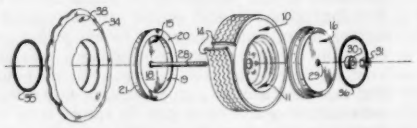
3,846,201

ASSEMBLY AND METHOD FOR BONDING TREAD MATERIAL TO A TIRE BODY

Homer L. Huskins, Salisbury, N.C., assignor to Brad Ragan, Inc., Spruce Pine, N.C.

Filed Nov. 2, 1972, Ser. No. 303,228
Int. Cl. B29h *5/04, 11/00, 17/36*
U.S. Cl. 156—96 **11 Claims**

1. A method of bonding previously cured elastomeric tread material to a previously cured elastomeric tire body which is particularly adapted for solid tires permanently mounted on wheels, the method comprising the steps of buffing the tread face of the previously cured tire body, encircling the buffed tread face with a bonding layer of uncured rubber, encircling the uncured rubber with a previously cured tread material, interposing the tire body between a pair of sealing discs each having a circular sealing lip, sealingly engaging the side walls of the tire bod



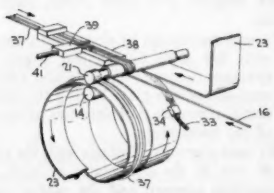
with the lips of the discs, encircling the tire body and tread material with a flexible fluid impervious envelope which extends outside the sealing discs, sealingly engaging said lips of said discs with said envelope by exerting radially directed forces on portions of the envelope and pressing the envelope portions into engagement with said discs, and then adhering the tread material to the tire body by curing the interposed rubber while retaining the tread material and tire body in assembled relation with the envelope.

3,846,202

METHOD FOR MAKING REINFORCED FLEXIBLE TUBING

Robert H. Clarke, Warsaw, Ind., assignor to American Brattice Cloth Corporation, Winona Lake, Ind.

Filed May 30, 1972, Ser. No. 257,878
Int. Cl. B31c *13/00*
U.S. Cl. 156—143 **6 Claims**



1. A method of making reinforced flexible tubing comprising the steps of:

feeding an elongated tape about a tube forming guide to form a series of spirally wound tape convolutions having overlapping side portions;

adhesively securing together said overlapping side portions after the first one of said convolutions is first formed;

continuously feeding an elongated reinforced wire on to the outer surface of said tape inwardly of the opposite overlapping side portions thereof after said first tape convolution is so formed;

continuously feeding an elongated wearstrip in place over said reinforcing wire; and adhesively securing said wearstrip on to said outer surface of said tape.

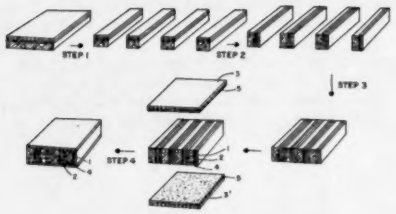
3,846,203
METHOD OF MAKING A SANDWICH PANEL CONSTRUCTION

Peter A. Immethun, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Original application June 21, 1971, Ser. No. 155,101, now Patent No. 3,708,385. Divided and this application Aug. 23, 1972, Ser. No. 282,961

Int. Cl. B32b *31/00*

U.S. Cl. 156—265 **2 Claims**



1. A method of manufacturing improved sandwich panel construction which comprises (a) cutting aluminum foam slab, having a metal sheet bonded to at least one side, into pieces of substantially equal dimensions, said cutting being in a unidirection plane passing through said metal sheet, (b) preparing a laminate of said pieces by bonding said pieces with a thermoset adhesive, so that said metal sheet bonded sides are substantially parallel, and (c) preparing a sandwich panel construction by bonding two outer metal layers to opposite sides of said laminate such that said layers are substantially normal to said metal sheet sides and said metal sheet sides extend fully between said outer layers.

3,846,204
HEATING METHODS

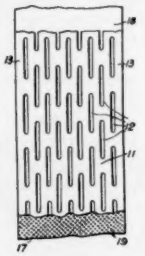
Paul Eisler, 56 Exeter Road, London, N.W. 2, England

Continuation-in-part of application Ser. No. 711,416, Mar. 7, 1968, now Patent No. 3,523,542, which is a continuation-in-part of application Ser. No. 293,953, July 10, 1963, now Patent No. 3,372,487, which in turn is a continuation-in-part of application Ser. No. 783,609, Dec. 29, 1958, now Patent No. 3,099,540. This application June 1, 1970, Ser. No. 42,084

Claims priority, application Great Britain, Jan. 7, 1958, 582/58

Int. Cl. B29c *19/06;* **B44d** *1/48*

U.S. Cl. 156—275 **4 Claims**



1. The method of heat processing at a temperature within a predetermined range a critical material to change its physical state between fluid and solid form without a sudden undesirable transition of state caused by temperatures outside said range, comprising the steps of providing a layer of said material, bringing into thermal contact with said layer a heating film occupied by an electrically conductive surface pattern uniformly distributed to provide a substantially constant temperature throughout the heating film, and passing an electric current through said surface pattern of such intensity to provide a temperature within said range in said layer of said material wherein the material is a liquid material requiring solidification produced by chemical reaction, including the step wherein the layer of material is provided on a durable carrier structure wherein the material is a layer of fluid paint containing a fluid medium and a solid film forming substance covering at least parts of said durable structure, and including the steps of covering the major part of the area of said heating film with said conductive surface pattern, and providing said current at a first intensity to raise the temperature at any point on the surface pattern in a range without the maximum at any point on the surface pattern reaching the boiling temperature of the fluid paint and subsequently at sufficient intensity to raise its temperature in a range without maximum at any point on the surface pattern reaching the temperature of sudden hardening of the paint.

3,846,205
METHOD FOR PRODUCING LAMINATED MATERIALS OF FIBERS

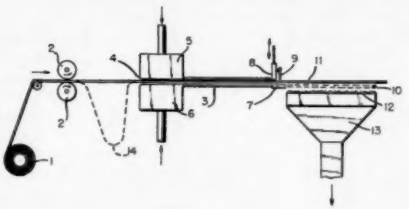
Masahide Yazawa, Tokyo, Japan, assignor to Polymer Processing Research Institute Ltd., Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 686,938, Nov. 30, 1967. This application Oct. 9, 1970, Ser. No. 79,707

Claims priority, application Japan, June 5, 1967, 42/35,819

Int. Cl. B32b *7/14*

U.S. Cl. 156—291 **14 Claims**



1. A method for producing a flexible gas permeable nonwoven material consisting of at least one web of split fibers which comprises arranging side by side the split fibers of at least one web of split fibers having a network structure, elongated lengthwise without substantial slacking and substantially parallel to each other; laying on the said web of split fibers a preformed solid shaped pattern of adhesive binder polymer which covers the surface of the said web of split fibers only locally those portions of said web which underly said shaped pattern of adhesive and; thereafter pressure adhering the resulting assembly to bind said adhesive and said web so as to leave loose and unfixed parts amid firmly fixed fiber parts, said shaped adhesive binder having a softening temperature range lower than the heat resisting temperature of said web said pressure-adhering being effected by heating said materials at a temperature lower than the heat resisting temperature of the said web but within the softening temperature range of the said adhesive binder.

3,846,206

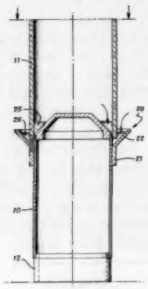
METHOD FOR BONDING CONCENTRIC TUBULAR ELEMENTS TO ONE ANOTHER

John H. Busma, Jr., Mountain View, and Curtis M. Romander, Los Altos Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed June 28, 1972, Ser. No. 267,220

Int. Cl. B32b *31/12*

U.S. Cl. 156—294 3 Claims



1. A method for bonding inner and outer tubular elements to one another in a concentric position, said method comprising providing a reservoir of viscous bonding material above the inner tubular element for application to the inner wall of the outer tubular element as the same is set into place above the inner element and is lowered thereover, said reservoir being supported by a cap set upon the inner tubular element, and with said inner wall acting to confine the material present in the reservoir; supporting a peripheral reservoir of the bonding material about the outer wall of said inner element by means of a slidably mounted collar for application of the bonding material to said wall as the collar is moved downwardly therealong, said outer wall serving to confine the bonding material present in the peripheral reservoir; and moving the collar downwardly along the inner element by pressing the same with the descending outer element, thereby simultaneously coating the adjacent walls to be joined as the respective inner and outer elements are brought into concentric registry along their full length.

3,846,207

APPARATUS FOR MAKING PLASTIC BUCKETS

Gene MacDaniel, Lithonia, and Howell T. McElvy, Decatur, Ga., assignors to Sweetheart Plastics, Inc., Wilmington, Del.

Original application Feb. 2, 1970, Ser. No. 7,955, now Patent No. 3,673,033. Divided and this application Apr. 17, 1972, Ser. No. 244,985

Int. Cl. B31b *3/02, 3/60*

U.S. Cl. 156—443 9 Claims

1. A container forming machine comprising a frame,

a turret mounted for rotation on the frame,

a plurality of forms having side wall and bottom wall surfaces mounted on the turret and each adapted to receive a side wall blank about its side wall surface,

a first station on the frame adjacent the turret and means in that station for applying a blank to each form as each form enters said station,

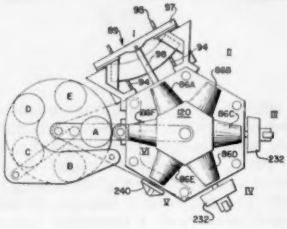
a magazine mounted on the frame in the first station for holding a side wall blank above the form in that station,

means for removing a blank from said magazine,

said means in the first station including said removing means and forming means for partially forming each blank into a cone and thereafter placing the partially formed conical side wall blank on the form in that station,

stop means mounted on each form for registering the blanks on them in the desired position,

heating and clamping means mounted on the frame in association with each form for heating the sides of the blank by positioning a radiant heater between facing surfaces of the blank to heat said facing surfaces to be lapped and thereafter clamping said facing surfaces together in lapped relation to form a lapped side seam for the container blank,



a second station on the frame disposed adjacent the first station in which station a bottom blank may be applied to the forms as they enter said station with the bottom including a peripheral flange lying in face to face contact with the inner surface of the side wall blank on the form over at least a portion of the axial extent of the flange when both side wall and bottom blanks are in place on the forms,

a heater mounted on the frame in a third station adjacent the turret and movable to engage at least the side wall blank on the turret to make it molten at the region where it engages the bottom as each form is in that station,

a forming tool mounted in a fourth station on the frame adjacent the turret for shaping and sealing the molten portion of at least the side wall while on the form and immediately after it is heated to precisely shape the union between the bottom and side wall,

and a fifth station adjacent the frame through which each form passes for removing the container on each form.

3,846,208

COMBINATION PIPE FUSION UNIT

Arthur H. McElroy, 2789 E. 45th Place, Tulsa, Okla. 74105

Continuation-in-part of application Ser. No. 121,791, Mar. 8, 1971, now Patent No. 3,729,360. This application May 15, 1972, Ser. No. 253,179

Int. Cl. B32b *35/00*

U.S. Cl. 156—499 12 Claims

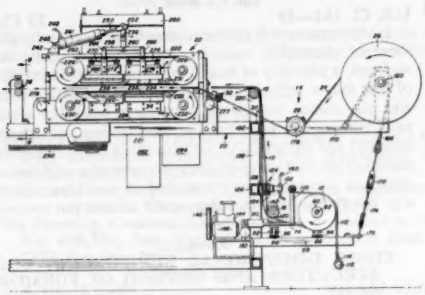
1. Pipe fusion apparatus for joining plastic pipe either coaxially in-line or at a selected angle to each other, comprising:

(a) frame means having a longitudinal axis;

(b) first pipe clamp means with its axis parallel to said longitudinal axis, said clamp fastened to said frame near a first end thereof;

(c) second pipe clamp means fixed near a second end of said frame for rigidly holding one pipe so that its axis is at a selected angle to and in a plane passing through the axis of said first clamp;

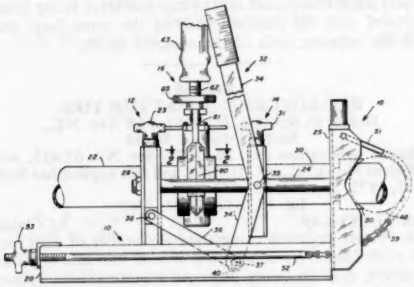
(d) third movable pipe clamp means slidably mounted on said frame between said first and second clamps thereof, said third clamp to retain another pipe at all times coaxial with said first clamp;



(e) means to longitudinally traverse said third clamp relative to said first clamp to provide said coaxial in-line pipe joints, and relative to said second pipe clamp to provide said angle type joints; and

(f) means positionable co-axial to said third clamp to heat the opposed pipe surfaces.

3,846,209
APPARATUS FOR APPLYING CLOSURE STRIPS TO PLASTIC FILM
H. Keith Howard, P.O. Box 649 or 939, N. College, Ulysses, Kans. 67880
Filed Aug. 11, 1972, Ser. No. 279,905
Int. Cl. B31f *5/00*
U.S. Cl. 156—502 **25 Claims**



1. In an apparatus for continuously sealing the longitudinal edges of a strip of heat-weldable material to the corresponding longitudinal edges of two contiguous plies of heat-weldable material as said strip and said plies are drawn continuously along a sealing path;

a first heat sealing station located along said path;

means for supplying said two contiguous plies of material to said first heat sealing station;

means for supplying said strip to said first heat sealing station;

means for aligning a first edge of said strip with said first heat sealing station;

means for aligning the edge of only one of said plies with said first heat sealing station;

means for continuously feeding said strip and said one of said plies through said first heat sealing station;

means for guiding the other of said plies away from said one of said plies to bypass said first heat sealing station;

a second heat sealing station loacted along said path and spaced from said first heat sealing station;

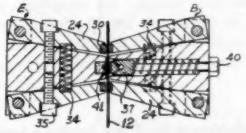
means for guiding said two plies and said strip along said sealing path from said first heat sealing station to said second heat sealing station;

means for aligning the second edge of said strip with said second heat sealing station;

means for aligning the edge of the other of said plies with said second heat sealing station; and

means for continuously feeding said strip and said other of said plies through said second heat sealing station, whereby said strip and said plies are continuously drawn along said path first through said first heat sealing station and subsequently through said second heat sealing station for sealing said strip first to said one of said plies and subsequently to said other of said plies.

3,846,210
APPARATUS FOR HEAT SEALING THERMOPLASTIC FILMS
Fergus M. Groundwater, 194 Betourney, St. Lambert, Quebec, Canada
Original application Feb. 17, 1971, Ser. No. 115,971, now abandoned. Divided and this application Sept. 11, 1972, Ser. No. 287,717
Int. Cl. B30b *15/34*
U.S. Cl. 156—583 **7 Claims**



1. An apparatus for sealing thermoplastic films, comprising a pair of opposed jaws having heat sealing faces adapted to be pressed together, clamping bars pivotally mounted on each jaw on each side of the heat sealing face, the clamping bars on each jaw having film holding faces adjacent the heat sealing face and pivotal mountings remote from the heat sealing face such that the bars converge toward the heat sealing face and spring means tending to force the bars apart against abutments, whereby as the jaws move toward each other the film is clamped and held between the heat sealing faces as well as between the clamping bar holding faces and as pressure is increased between the jaws, the holding faces on each jaw converge toward the heat sealing face and thus move the film toward the sealing faces.

3,846,211

FURNITURE ELEMENT

Marcel Begin, Camille Morrissette, Pierre Beaumier, and Charles Tupinier, Victoriaville, Quebec, Canada, assignors to Victoriaville Furniture Limited, Victoriaville, Quebec, Canada

Filed Apr. 10, 1973, Ser. No. 349,705
Int. Cl. D04d 7/06
U.S. Cl. 161—7 6 Claims

1. A structural and ornamental element for furniture or the like comprising

an elongated backing support comprising a wood member and a reinforcing member extending at least along portions of said wood member of reduced cross-section and

a facing of structurally weak material of ornamental configuration adhered to said support.

3,846,212

METHOD AND MACHINE FOR THE MANUFACTURE OF WREATHS, POMPONS, ROSETTES, AND THE LIKE

Gerd Rodermund, 24 In der Breite, 763 Lahr, Germany, and Helmut Kappus, Lahr, Germany; said Kappus assignor to said Rodermund

Original application Feb. 9, 1968, Ser. No. 704,462, now Patent No. 3,780,514. Divided and this application Oct. 10, 1973, Ser. No. 404,937
Int. Cl. A47g 33/06
U.S. Cl. 161—15 8 Claims

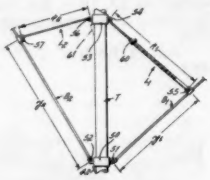
1. A wreath characterized by its structure consisting of two intertwined wires, between which at least one strip, shoved together in its longitudinal direction, preferably to 1/5 to 1/50 of its origial length, is bound.

3,846,213

FOLDABLE ARTIFICIAL CHRISTMAS TREE

Norbert Thiemann, 544 Claymore Terrace, Cincinnati, Ohio 45238

Filed July 24, 1972, Ser. No. 274,456
Int. Cl. A47g 33/06
U.S. Cl. 161—17 4 Claims



1. A foldable artificial tree having a trunk and a plurality of tiers of branches of different lengths, the length of the branches in upper tiers being less than the length of branches in lower tiers, and means mounting said branches to said trunk for folding the branches of each tier inwardly toward said trunk, the mounting means comprising:

a link for each branch in said tree, each link being pivoted at one end to an intermediate point on its respective branch, the links within a tier being of different lengths so that when the tree is in erect condition the links hold the branches in a given tier at angles which differ from branch to branch,

each tier having associated with it a first means on the trunk pivotally mounting the inner ends of the links of the respective tier,

each tier also having associated with it a second means on the trunk pivotally mounting the lower ends of the branches of the respective tier,

one of said first and second means being slidable along said trunk with respect to the other of said first and second means,

the sum of the length of a link and the distance between the lower end of the respective branch and the intermediate point to which the link is attached being a constant for all branches and links in a given tier.

3,846,214

ORNAMENTAL PLAQUE

Julius Rosenzweig, 2501 Nostrand Ave. 11210, and Rhoda Altenhaus, 1230 Avenue Y 11235, both of Brooklyn, N.Y.

Filed May 23, 1973, Ser. No. 363,250
Int. Cl. B44f 9/00
U.S. Cl. 161—19 23 Claims

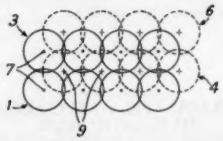
1. An ornamental plaque, comprising a generally planar sheet of pierceable material having two opposite major surfaces; a plurality of bead-like elements arranged on one of said major surfaces to form a decorative design pattern; and pin means associated with each bead-like element, each pin means piercing and penetrating said sheet of material for maintaining an associated bead-like element mounted on said sheet of material, whereby said bead-like elements are maintained arranged in said decorative design pattern by the retaining action of said pin means.

3,846,215

THREE DIMENSIONAL REINFORCING COIL STRUCTURE AND METHOD OF FORMING SAME

Michel Antoine Jules Maistre, Bordeaux-Cauderan, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Mar. 1, 1972, Ser. No. 230,900
Claims priority, application France, Mar. 5, 1971, 7107794
Int. Cl. B31c 31/00; B65h 54/00
U.S. Cl. 161—47 12 Claims



1. A three-dimensional reinforcing structure comprising a plurality of superimposed layers of helical coils of filaments, the coils all having substantially the same diameter and pitch and parallel axes lying on a network of polygonal mesh, each coil of one coil layer being interthreaded with the adjacent coils of the same layer and with the adjacent coils of the adjacent layers.

3,846,216

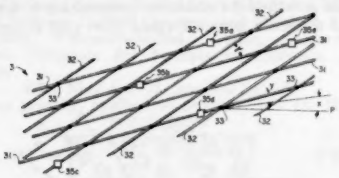
REINFORCEMENT MAT FOR TIRE

Daniel D. Streeter, Jr., 4201 51st Ave. NE., Seattle, Wash. 98105

Original application Oct. 20, 1970, Ser. No. 82,423, now Patent No. 3,712,361. Divided and this application Sept. 21, 1972, Ser. No. 291,054
Int. Cl. B32b 7/04, 5/12
U.S. Cl. 161—49 14 Claims

1. A mat structure comprising a plurality of fiber layers, each fiber layer comprising at least two sets of parallel fibers, one set being disposed angularly with respect to the other, the two sets defining a mean angular disposition for the layer, each successive layer being disposed angularly with respect to the adjacent layer with alternate layers also being angularly disposed with each other, each set of parallel fibers within each layer being attached to one another at a plurality of points of intersection, each

layer being attached to the adjacent layers at a plurality of node points, said node points being spaced from said fiber intersection points within each layer whereby when



the mat is compressed or stressed by external forces on the mat, the fibers of each layer will tend to mesh with fibers of adjacent layers.

3,846,217

POSTFORMABLE THERMOSET RESIN CONTAINING FIBROUS LAMINATE AND PROCESS OF POSTFORMING THE SAME

Gene Edward Grosheim, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

No Drawing. Continuation of abandoned application Ser. No. 609,756, Jan. 17, 1967. This application June 2, 1972, Ser. No. 259,162

Int. Cl. D06g *1/00*

U.S. Cl. 161—88 **12 Claims**

1. A decorative laminate comprising a plurality of fibrous core sheets and a fibrous decorative sheet which are impregnated with a thermoset resin and which have been heat and pressure consolidated into a unitary structure, said laminate having coated on at least one of its broad surfaces, whereat postforming is to be effected, a substantially uniformly thick coating consisting essentially of a substantially strain-resistant, slip-resistant, nonextensible dry adhesive material which retards laminate surface stretch during deforming, has a reinforcing layer embedded therein and is readily removable from said surface, wherein said coating covers said laminate substantially from edge to edge in at least one direction, said laminate being capable of being postformed through a radius of between about 0" and 1" in the area of said coating without displaying any signs of crazing or cracking upon removal of said coating therefrom.

3,846,218

FIBER OR PAPER BOARD STRUCTURE

William A. Wootten, 425 Via Costa, Palos Verdes Estates, Calif. 90274

Filed Aug. 9, 1971, Ser. No. 170,120

Int. Cl. B32b *3/10*

U.S. Cl. 161—111 **13 Claims**

1. A structural product comprising: two flat paper board or fiber board panels disposed in spaced parallel planar relation to one another, each of said panels having a plurality of partial perforations therein defining flat tabs each of which is bent about a hinge line constituting the uncut portion of its associated partial perforation, each tab extending in a direction substantially perpendicular to the plane of its panel toward the other of said panels across substantially the entire space between said panels,

each of the flat tabs extending from one of said panels being disposed in planar contact with and substantially completely overlapping planar relation to a corresponding tab extending from the other of said panels,

said overlapping contacting tabs being attached to one another by adhesive or mechanical interlock to form intermediary members each of which has a thickness at least equal to the combined thicknesses of said two panels, said intermediary members extending at right angles to the planes of each of said panels to retain said parallel panels in fixed position relative to one another.

3,846,219

WOOD-CHIP BOARDS

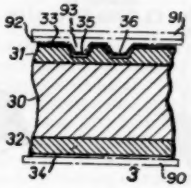
Albrecht Kunz, Gschwend, Germany, assignor to Uniboard AG, Zug, Switzerland

Original application May 7, 1971, Ser. No. 141,301, now Patent No. 3,793,125. Divided and this application Aug. 7, 1972, Ser. No. 279,052

Claims priority, application Germany, June 24, 1970, P 20 31 296.3

Int. Cl. B29j *5/02;* **B32b** *21/02*

U.S. Cl. 161—119 **1 Claim**



1. A wood-chip board comprising a coarse chip innermost layer containing coarse wood chips having a lateral length of up to 10 mm., and two external fine chip layers overlaying said coarse layer containing wooden fibers with a diameter of less than 0.1 mm. and exhibiting a fineness ratio of at least 1:50, the coarse chips and wooden fibers being glued with a curable resinous material, each external layer being overlaid with a decorative paper sheet impregnated with curable resinous material, and at least one of said decorative sheets and neighboring portions of the adjacent fine chip layer are together embossed and cured to yield a relief-like pattern, the depth of the relief extending into the adjacent fine chip layer to an extent which is greater than the thickness of the decorative layer.

3,846,220

MULTI-LAYER WEB OF PACKAGING MATERIAL

Norbert Buchner, Beutelsbach, Württemberg, Germany, assignor to Fr. Hesser Maschinenfabrik AG., Stutgart-Bad Cannstatt, Germany

Filed June 23, 1972, Ser. No. 265,784

Claims priority, application Germany, June 24, 1971, P 21 31 322.4

Int. Cl. B32b *3/00, 7/14, 31/12;* **B65d** *7/12*

U.S. Cl. 161—145 **6 Claims**

1. A multi-layer web of packaging material for forming the walls of a packaging container, comprising:

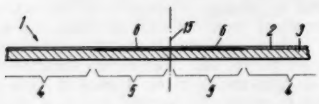
a substrate layer;

a covering layer of thermoplastic material placed on and in juxtaposition with said substrate layer;

the covering layer having at least two zones extending substantially parallel to each other and substantially continuous in the direction of the length of the web;

one of said zones being permanently secured to said substrate;

the other of said two zones constituting a heat seal responsive seam zone releasably secured to said substrate;



and a separating agent between said seam zone and said substrate.

3,846,221

LABELLING DEVICES

Josef W. Golec, Boston, England, assignor to Norprint Limited, Boston Lincolnshire, England

Filed June 25, 1973, Ser. No. 373,038
Claims priority, application Great Britain, June 30, 1972, 30,660/72
Int. Cl. B32b *5/16, 5/18*
U.S. Cl. 161—159 **10 Claims**

1. A pressure-applying member comprising
resilient substrate means and a contact surface of the substrate means for applying the required pressure to an article, and
a plurality balls adhered to the contact surface by an adhesive which remains permanently flexible.

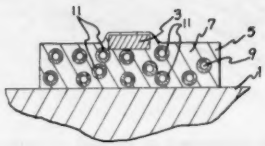
3,846,222

MULTILAYER DIELECTRIC

Raymond Louis Dietz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Original application June 5, 1970, Ser. No. 43,910, now Patent No. 3,673,092. Divided and this application May 8, 1972, Ser. No. 251,501
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **10 Claims**

1. A dielectric lamina formed from a dielectric composition, said composition comprising:
(a) about 60–40% by weight of alead barium borosilicate glass binder having an average particle size of about 1.0–9.0 microns which is useful as a dielectric binder material in microelectronic devices and which is capable of being substantially saturated by a ceramic powder; and
(b) about 60–40% by weight of a ceramic powder selected from the group consisting of ZrO_2, Al_2O_3, TiO_2, the zirconium silicates, and devitrified glass particles, and having an average particle size of about 1–10 microns; the amount and particle size of said glass binder and ceramic powder being correlated such that the ceramic powder substantially saturates the glass binder in that insufficient glass binder remains in unsaturated form to wet the surfaces of a solderable conductor when said conductor is heat-sealed thereto at about at least the temperature at which the dielectric composition is fired and the dielectric lamina formed from said composition



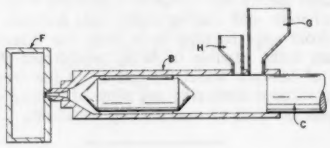
is substantially free from pinholes and cracks, said dielectric lamina exhibiting a dielectric constant of about 4–7 at a 2 mil thickness, and a dielectric strength of greater than about 1000 volts/mil, when said lamina is formed by firing it at a temperature of 800–1000° C. for about 5–15 minutes.

3,846,223

CONDUCTIVE PLASTIC ARTICLE AND METHOD FOR MAKING SAME

Burton E. Lederman, Swarthmore, Pa., and Jack D. Boudrie, Grand Rapids, Mich., assignors to Gulf + Western Industrial Products Company, Salem, Ohio

Filed Aug. 30, 1972, Ser. No. 284,943
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **11 Claims**



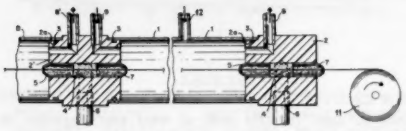
1. An article of substantially non-conductive synthetic plastic material having an outer surface with conductive particles molded into and at least partially imbedded within a portion of said outer surface,
said article being obtained by feeding a first quantity of non-conductive synthetic plastic material and a second, substantially lesser quantity of synthetic plastic material through a molding apparatus including a mold cavity, so that said first and second quantities simultaneously enter said mold cavity,
said second quantity of material containing said conductive particles distribution therein and having a lower viscosity and lesser density at the time of being fed into said cavity than said first quantity of material, so that said synthetic plastic material containing conductive particles coats parts of said apparatus and thereby is distributed on the outer surface of said non-conductive synthetic plastic material in said mold cavity, and molding said materials into said article which has thereby an outer surface with said conductive particles being present in at least sufficient quantities to render said outer surface sufficiently conductive to serve as an electrical ground.

3,846,224

BORON FILAMENTS WITH A BORON CARBIDE ANTIDIFFUSION COATING, AND METAL MATRIX MADE THEREFROM

Marius Leclercq, Lagny, Daniel Louis Morin and Michael Henri Damien, Corbeil Essonnes, and Monique Andree Andreani, Villeneuve-le-Roi, France, assignors to Societe Nationale des Pondres et Explosifs, Paris, France

Filed May 4, 1972, Ser. No. 250,287
Claims priority, application France, May 11, 1971, 7116885
Int. Cl. C23c *1/08, 11/08*
U.S. Cl. 161—170 6 Claims



1. A boron filament having a boron carbide coating thereon of a coating thickness of no more than 15 microns.

3,846,225

HIGH TEMPERATURE INSULATION-BINDER COMPOSITIONS

Joseph P. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

No Drawing. Continuation of abandoned application Ser. No. 431,196, Feb. 8, 1965. This application Aug. 28, 1970, Ser. No. 68,017
Int. Cl. D02g *3/00*
U.S. Cl. 161—175 6 Claims

1. An article of manufacture comprising intermeshed glass fibers which have been initially bonded together with an organic binder selected from the group consisting of phenol-aldehyde, phenol-amino-aldehyde, and amino-aldehyde resins and subsequently saturated and bonded with from 30 percent to 200 percent, based upon the weight of the glass fibers, of an inorganic binder-saturant consisting essentially of boric acid and bentonite, said bentonite being in the hydrogen form.

3,846,226

HIGH LUSTER, ANTISOILING ACRYLIC FIBERS

Walter A. Smithey, Santa Rosa, Fla., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 9, 1973, Ser. No. 358,744
Int. Cl. D02g *3/00, 3/22*
U.S. Cl. 161—178 5 Claims

1. A low-density, lustrous acrylic fiber of reduced soiling tendencies comprising a fiber-forming first acrylonitrile polymer containing at least 70 weight percent acrylonitrile and the balance of one or more vinyl monomers and, as small discontinuous elongated segments within said first polymer separated therefrom by void space, from about 1 to 10 weight percent, based on the total weight of the fiber, of a second acrylonitrile copolymer incompatible with said first polymer and containing from 50 to 95 weight percent acrylonitrile and from 5 to 50 weight percent of a monomer of the formula

$$CH_2=\underset{\displaystyle R_1}{\underset{|}{C}}-COOR_2$$

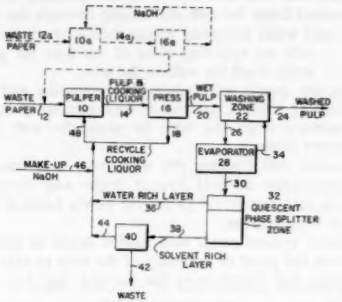
wherein R_1 is hydrogen or methyl and R_2 is selected from hydrogen, hydroxyalkyl of 2 to 4 carbon atoms and $\{CH_2CH_2O\}_nR_3$ wherein n is an integer of about 1 to 50 and R_3 is selected from hydrogen, alkyl of 1 to 4 carbon atoms, and aryl of monocyclic structure having less than about 10 carbon atoms.

3,846,227

DEINKING OF WASTE PAPER WITH AN AQUEOUS SOLUTION CONTAINING AN N-ALKYLLACTAM SOLVENT

Thomas S. Mestetsky, Belvidere, N.J., and Bruce G. Webster, Cincinnati, Ohio, assignors to GAF Corporation, New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,657
Int. Cl. D21c *5/02*
U.S. Cl. 162—5 36 Claims



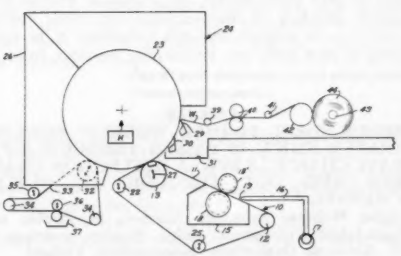
1. A process for the deinking of waste paper comprising contacting the waste paper to be deinked with an aqueous treating composition containing an N-alkyllactam solvent having from 1 to 16 carbon atoms in the alkyl group at a temperature of from about 110° F. to 210° F., said solvent being present in an amount within the range of from about 0.5% to about 99.5% by weight based on the total weight of said aqueous treating composition, whereby the waste paper is effectively deinked, said N-alkyllactam solvent being recoverable for use in the treatment of additional quantities of waste paper, said process being of particular advantage in the treatment of coated or otherwise difficult-to-deink grade waste paper.

3,846,228

FORMING TISSUE PAPER BY PRESSING THE WEB WHILE ON AN UPRUNNING FORMING WIRE AND TRANSFERRING THE WEB DIRECTLY TO A YANKEE DRYER

Donald A. Ely, Roscoe, Ill., and Thomas G. McKie, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Nov. 13, 1972, Ser. No. 306,020
Int. Cl. D21f *1/00, 2/00, 9/02*
U.S. Cl. 162—206 6 Claims



1. In a machine for making fibrous webs such as tissue and the like,

an endless traveling plastic forming wire having an uprunning forming run having an incoming end and a longitudinally spaced outgoing end,

a Yankee dryer including a heated drum at the outgoing end of the forming run of the wire and having a polished peripheral surface,

a stock inlet adjacent the incoming end of the forming run of the wire laying stock in the form of tangled fibers in aqueous suspension on the top surface of the forming run of the wire at substantially the speed of travel of the forming run,

means downstream of said stock inlet removing water from the web and a save-all for catching the water pressed from the web and falling through the wire,

said water removing means including grooved press rolls on opposing sides of the wire for pressing water from the web on the wire,

a suction couch roll defining the outgoing end of the forming run of the wire, and removing sufficient moisture from the wire to paste the web to said heated drum,

a contact roll training the wire from said couch roll tangentially of said heated drum and cooperating with said couch roll to lay the newly formed web on the heated drum,

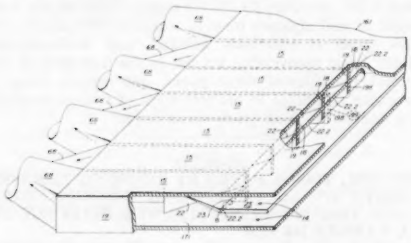
a doctor spaced about said heated drum at least 270° from the point of tangency of the wire to said heated drum and transferring the formed web for coiling.

3,846,229

FLOW SYSTEMS FOR INDUCING FINE-SCALE TURBULENCE

Otto Julius Kallmes, Marblehead, Mass., assignor to Lodding Engineering Corporation, Auburn, Mass.

Filed Jan. 28, 1972, Ser. No. 221,555
Int. Cl. D21f *1/06*; F15d *1/02*
U.S. Cl. 162—216 **29 Claims**



1. A method of supplying stock to a paper making machine comprising the steps of establishing a flow of stock in a plurality of parallel flow paths, directing the stock in each flow path to change its cross-sectional shape alternately between quadrangular and triangular without substantially changing its cross-sectional area while flowing therein so as to produce fine-scale turbulence in the stock flowing in each path, and discharging the stock from all of said paths into a common slice nozzle.

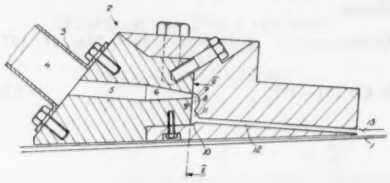
3,846,230

FIBROUS SHEET FORMER WHEREIN CONCENTRATED STOCK IS PASSED THROUGH SEPARATE CHANNELS INTO A DEFLECTION CHAMBER AND OUT THROUGH AN OUTLET CHANNEL

Douglas Wahren, Taby, Bo Norman, Stockholm, and Karl-Johan Grundstrom, Solna, Sweden, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Apr. 19, 1973, Ser. No. 352,565
Claims priority, application Sweden, Apr. 21, 1972, 5,255/72
Int. Cl. D21f *1/02, 1/06*
U.S. Cl. 162—216 **11 Claims**

1. Method for forming a continuous material web of fibrous particles starting from a suspension of fibrous particles with a fibre concentration of about 1% to about 6% by weight, comprising in combination the following steps: the highly concentrated suspension is divided over and sprayed through several parallel-coupled apertures; after which the suspension jets are accelerated and



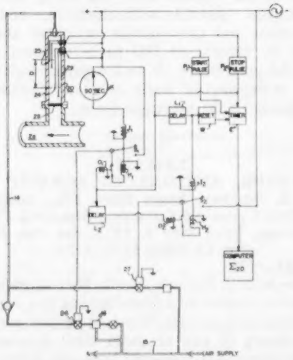
sprayed at high velocity into at least one chamber in which the jets are reunited and deflected; then the suspension flow is accelerated and deflected anew; and finally the turbulence is allowed to decay in order to form a consolidated three-dimensional net structure of fibrous particles before they are deposited.

3,846,231

APPARATUS FOR DETERMINATION OF THE MAGNITUDE OF TOTAL SPECIFIC ENERGY ABSORBED BY A SAMPLE OF PULP STOCK

William E. Crosby, Hanahan, and Hong H. Lee, Charleston Heights, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed July 25, 1972, Ser. No. 274,967
Int., Cl. D21d *1/20*
U.S. Cl. 162—263 **3 Claims**



1. An apparatus for the determination of the magnitude of refining energy absorbed by a sample of pulp stock, said apparatus comprising:

(A) stock sample chamber means separated from a stock reservoir by a perforated partition means adapted to pass the water vehicle of said stock but substantially obstruct passage of the stock fiber;

(B) chamber pressure control means for regulation of pressure within said chamber relative to the pressure of said stock reservoir to selectively admit and expel said water vehicle;

(C) at least two liquid level sensing means positionally separated within said chamber to delineate a prescribed volume therebetween;

(D) chronometer measuring means started by water vehicle actuation of one said sensing means and stopped by water vehicle actuation of the other said sensing means, said chronometer means emitting a first signal representative of an elapsed time interim between said starting and stopping; and

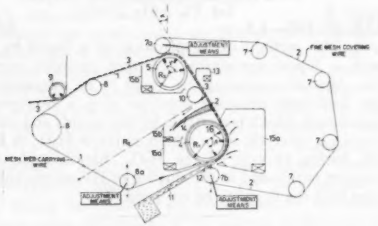
(E) signal processing means having data storage means disposed therewith, said data storage means being disposed and provided with data to relate such elapsed time interims to the magnitude of total specific energy absorbed by a stock sample representative of said stock sample, said signal processing means receiving and relating said first signal to said storage means data and deriving said corresponding total specific energy as a signal.

3,846,232

TWIN-WIRE PAPER FORMING WITH WIRES WRAPPING AROUND A SUCTION WEB-FORMING BREAST ROLL AND THEN FOLLOWING A CURVED PATH TO A SUCTION COUCH ROLL

Matti Kankaanpaa, Tapiola, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Mar. 23, 1973, Ser. No. 344,260
Int. Cl. D21f *1/00, 1/36, 1/60*
U.S. Cl. 162—301 **3 Claims**



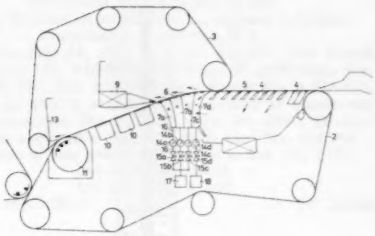
1. Improvement in a two-wire former in a paper machine, comprising in combination, a web-carrying wire and a covering wire; two rolls with foraminous mantle surfaces within the loop of said carrying wire, wherein the one which is first in the direction of travel of the web is a web-forming roll and the second is a couch roll; dewatering compartments within the mantle of said rolls, at least one in each; said carrying wire and covering wire running along a common curved path starting at said web-forming roll and up to said couch roll, this path forming a convex part of the loop of said carrying wire, the course of said curved path being determined by the positions of at least one wire-guiding means and furthermore at least one dewatering means placed within the loop of said carrying wire, and furthermore the carrying wire and covering wire both being conducted onto said web-forming roll each over its individual first and second wire-guiding roll to thereafter form a throat therebetween, means for adjusting the position of each of said first and second wire-guiding rolls; furthermore a headbox, which supplies pulp into said throat; the whole combination being such that the bulk of the dewatering of the web takes place at said web-forming roll on the sector, having a size of 90 to 150 degrees of arc, lapped by said wires, primarily by effect of the pressure developed in the pulp suspension between said wires the expressed water being removed on effect of the centrifugal force outwards and partly in the opposite direaction into said web-forming roll.

3,846,233

PAPERMAKING MACHINE HAVING A SINGLE WIRE RUN AND A DOUBLE WIRE RUN OVER A DOWNWARDLY CURVING DEWATERING BOX

Matti Kankaanpaa, Tapiola, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Sept. 11, 1972, Ser. No. 288,217
Int. Cl. D21f *1/00*
U.S. Cl. 162—312 **2 Claims**



1. In a paper machine, a wire section having a first wire forming a single-wire initial portion with first dewatering means, by the aid of which water is removed from the pulp web, and which wire section after said initial portion comprises a second wire creating a two-wire portion, second dewatering means guiding said two-wire portion to be curved downwardly at least at its initial end, characterized in that said single-wire initial portion of the wire section has a length such that when dewatering of the pulp web is cautiously performed in said single-wire initial portion, the pulp web achieves before the two-wire portion a degree of felting such that the fibres in the pulp web are no longer able to move appreciably with reference to each other, and that said two-wire portion is guided by said second dewatering means to curve downwardly so that water is removed in connection with said second dewatering means mainly by effect of centrifugal force through the upper wire of the two-wire portion and in a direction opposite to that in the single-wire initial portion, the object being to reduce the escape of additives of the pulp web, such as fillers, and of fine constituents of the pulp web, and to increase the splitting strength of the paper that is being manufactured, wherein said second dewatering means comprises a dewatering box which has means for forming several consecutive chambers, means for adjusting the pressures in said chambers in order to achieve a symmetrical fibre structure of the pulp web, of which chambers in the one which is first in the direction if travel of the pulp web or in those which are first in said direction a vacuum has been arranged to act, and in the subsequent chamber or chambers, a positive pressure has been arranged to act.

3,846,234

STACKED AND TILTABLE COMPARTMENTS FORMING A NUCLEAR FUEL ASSEMBLY

Gottfried Class, Blankenloch, and Berend Eggers, Karlsruhe, Germany, assignors to Gesellschaft fur Kernforschung, Karlsruhe, Germany

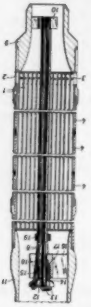
Filed Mar. 8, 1971, Ser. No. 122,076
Claims priority, application Germany, Mar. 20, 1970, P 20 10 927.7
Int. Cl. G21c *3/30*
U.S. Cl. 176—78 **8 Claims**

1. A fuel assembly for a nuclear reactor with fast neutron flux, comprising:

(A) a plurality of tubular compartments each having a longitudinal axis, said compartments being arranged and assembled in an axially aligned series to form

an elongated tubular fuel element box having a longitudinal axis; the longitudinal axes of said tubular compartments being generally in alignment with the longitudinal axis of said fuel element box;

(B) a plurality of fuel elements or pins disposed longitudinally in said fuel element box and forming a fuel pin bundle having a longitudinal axis;



(C) means for interconnecting the adjoining compartments with one another; the adjoining compartments having overlapping and engaging end portions providing a radial clearance therebetween; said means for interconnecting the adjoining compartments and said clearance permitting a relative tilting movement between any two adjoining compartments such that the longitudinal axis of at least one of said two adjoining compartments tilts with respect to the longitudinal axis of said fuel element box in response to forces generated by heat expansion; and

(D) tension means extending under tension substantially along the longitudinal axis of said fuel element box for holding said assembled compartments together, said tension means being capable of undergoing a variation in its length upon said relative tilting movement between any two of said compartments.

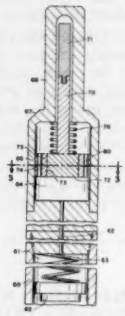
3,846,235

FAILURE INDICATOR FOR NUCLEAR REACTOR FUEL ELEMENT

Cecil R. Jones, Orange, Conn., Arthur J. Goldman, White Plains, N.Y., and D. Garth Rowe, San Jose, Calif., assignors to Transfer Systems, Incorporated, North Haven, Conn.

Filed Nov. 3, 1972, Ser. No. 303,548
Int. Cl. G21c *3/18, 17/06*
U.S. Cl. 176—80 **12 Claims**

1. A fuel element for a nuclear reactor comprising an elongated sealed enclosure containing nuclear fuel, said enclosure including at one end a pressure-tight non-magnetic extension, an indicator pin within the enclosure and having a portion comprising ferromagetic material extending within the said extension, said indicator pin being movable in the elongated direction of the enclosure from a first position to a second position, resilient means connected to the indicator pin for biasing the indicator pin for movement toward the second position, pressure differential means within the enclosure for maintaining the indicator pin in its first position against the force exerted by the resilient means, said pressure differential means being disabled from maintaining the indicator pin in its first position when an opening in the enclosure causes a pressure loss within the enclosure whereby the resilient means displaces the indicator pin to its second position indicative of failed fuel, the pressure-tight extension having a reduced width compared with that of the enclosure portion containing the nuclear fuel, and the ferromagnetic material portion being located entirely within the reduced-width extension at both the first and second positions.



3,846,236

METHOD AND APPARATUS FOR DIALYSIS

Stuart J. Updike, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 22, 1971, Ser. No. 191,720
Int. Cl. A61n *1/03*
U.S. Cl. 195—1.8 **10 Claims**

1. The method of oxygenation of a liquid by dialysis with a liquid containing hydrogen peroxide comprising the steps of separating the liquid to be oxygenated from the hydrogen peroxide solution with a semi-permeable membrane which is wettable by the liquids and which embodies a catalytic agent which converts H_2O_2 to H_2O and O_2 during passage of the H_2O_2 therethrough, whereby oxygen is released at the surface of the membrane in contact with the liquid to be oxygenated.

3,846,237

PROCESS FOR PRODUCTION OF CORRINOID COMPOUNDS CONTAINING NO METAL

John I. Toohey, Kingston, Ontario, Canada (870 Hilgard Ave., Los Angeles, Calif. 90024)

No Drawing. Continuation-in-part of abandoned application Ser. No. 538,893, Mar. 21, 1966, and a division of application Ser. No. 684,640, Nov. 21, 1967, now Patent No. 3,505,311, dated Apr. 7, 1970. This application Sept. 8, 1969, Ser. No. 871,056
The term of this patent subsequent to July 5, 1989, has been disclaimed
Int. Cl. C12d *13/02*
U.S. Cl. 195—28 R **1 Claim**

1. The process for preparing metal-free corrinoid compounds which comprises cultivating at least one metal-free corrin-producing photosynthetic bacterium and extracting and isolating said compounds from the cells of said bacterium.

3,846,238

FERMENTATION PROCESS FOR CONVERTING HYDROCARBONS TO PROTEINACEOUS MATERIALS

Gordon Homer Evans, Kingswood, England, and Jean Lindsay Shennan, Falkirk, Scotland, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,228
Claims priority, application Great Britain, Sept. 17, 1971, 43,421/71
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **3 Claims**

1. A process for the conversion of a hydrocarbon into a proteinaceous material which comprises continuously cultivating *Candida lipolytica* strain C.B.S. number 6331

in the presence of a straight chain hydrocarbon having at least 10 carbon atoms per molecule, an aqueous nutrient medium and a gas containing free oxygen.

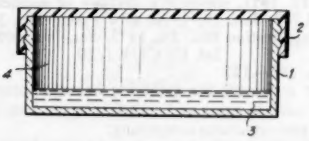
3,846,239
PROCESS FOR THE PREPARATION OF HEAT-RESISTANT α-GALACTOSIDASE ENZYME
Jacques J. Delente, University City, and Richard J. O'Connor and Mau-Jung Kuo, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed July 24, 1972, Ser. No. 274,523
Int. Cl. C07g 7/02
U.S. Cl. 195—66 R **8 Claims**

1. A process for the preparation of α-galactosidase enzyme which comprises cultivating in an aqueous nutrient fermentation medium the organism *Bacillus stearothermophilus* NRRLB–5407 and in which α-galactosidase enzyme is recovered from the fermentation medium.

3,846,240
PREPARATION OF A DUSTLESS POWDERY PROTEASE-CONTAINING COMPOSITION
Yoshio Nakao, Osaka, Kiyoshi Nara, Kyoto, Kazuyoshi Katamoto, Osaka, and Kikuo Ito and Sakashi Ikeda, Yamaguchi, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Mar. 21, 1973, Ser. No. 343,474
Claims priority, application Japan, Mar. 25, 1972, 47/30,112
Int. Cl. C07g 7/02
U.S. Cl. 195—68 **5 Claims**

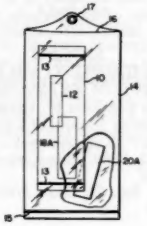
1. Process for producing a dustless powdery composition containing a protease from protease-containing wet precipitates prepared from a culture broth of a protease-producing micro-organism, which comprises the steps of:
(a) bringing the wet precipitates into contact with a hydrophilic organic solvent of a water content of about 15 to 30% selected from the group consisting of methanol, ethanol, propanol, isopropanol, acetone, methylethyl ketone, dioxane and tetrahydrofuran;
(b) drying the resulting solvent-substituted wet precipitates until the content of the solvent in the total precipitates becomes below 10%;
(c) pulverizing the dried mass of precipitates into powder, and
(d) admixing the powder with 0.1 to 10% of a liquid or oily non-volatile wetting agent relative to the weight of the powder.

3,846,241
MEDIUM FOR NEISSERIA AND METHOD OF CULTIVATING NEISSERIA
Yvonne Constance Faur, 2385 Grand Ave., Bronx, N.Y. 10468; Martin Harold Weisburd, 82—40 Austin St., Kew Gardens, N.Y. 11415; Marion Evans Wilson, 155 W. 68th St., New York, N.Y. 10023; and Paul S. May, 23 Fairview Lane, Orangeburg, N.Y. 10962
Filed Oct. 10, 1972, Ser. No. 296,253
Int. Cl. C12k 1/10
U.S. Cl. 195—100 **17 Claims**



1. The mediums contain a filtered or autoclaved yeast dialysate as a source of essential factors that promote rapid and luxuriant growth of pathogenic Neisseria, including the most fastidious strains that fail to grow on other available media. The filtered yeast dialysate in the medium composition may be used either in open containers or closed containers with the open containers incubated under outside CO_2 tension. On the other hand, the autoclaved yeast dialysate can only be used where the incubation is carried out under outside increased CO_2 tension.

3,846,242
BIOLOGICAL STERILITY INDICATOR AND METHOD FOR USING SAME
Robert R. Ernst, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Application July 14, 1967, Ser. No. 653,414, now Patent No. 3,585,112, which is a division of application Ser. No. 503,987, Oct. 23, 1965, now Patent No. 3,346,464, which in turn is a continuation-in-part of abandoned application Ser. No. 272,035, Apr. 10, 1963. Divided and this application Dec. 28, 1970, Ser. No. 101,760
The term of this patent subsequent to Oct. 10, 1984, has been disclaimed
Int. Cl. G01n 33/00
U.S. Cl. 195—103.5 **12 Claims**



1. A sterility indicator comprising:
(a) an envelope, being permeable to a selected gaseous sterilizing media but being impermeable to a selected suitable test organism and to bacteria;
(b) a selected quantity of test organisms being resistant to the selected gaseous sterilizing media, being in an unincubated state, and being sealed within said envelope; and
(c) a selected quantity of a selected growth media in an unincubated state sealed within said envelope.

3,846,243
AUTOMATED ANALYSIS OF OXIDATIVE METABOLITES
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Raymond L. Furner, Birmingham, Ala.
Filed Aug. 18, 1972, Ser. No. 281,908
Int. Cl. C12k 1/00
U.S. Cl. 195—103.5 R **6 Claims**

1. A method for the continuous-flow analysis of oxidative metabolites of aromatic amines and of compounds which produce formaldehyde on oxidative dealkylation consisting essentially of the steps of:
(1) combining a fluid stream comprising a substrate-cofactor in a phosphate buffer with a rat liver homogenate comprising oxidative microsomal enzymes,
(2) dividing the resulting mixture into a first stream for determining the quantity of protein and into a second stream for metabolizing the substrate and for determining the quantity of metabolite generated during such metabolism,
(3) diluting said first stream with phosphate buffer,
(4) aerating said diluted first stream,
(5) reacting said aerated first stream with a color forming reagent for protein,
(6) colorimetrically determining the amount of protein,

(7) intermittently adding small aliquots of 100% oxygen to said second stream,
(8) incubating said oxygenated second stream at a controlled temperature to promote the formation of metabolite by enzyme action on said substrate,
(9) dialyzing said second stream against phosphate buffer, and
(10) colorimetrically determining the concentration of metabolite after reacting the dialysate with a color forming reagent for said metabolite.

3,846,244

MICROORGANISM RECOVERY PROCESS

John N. Dew, Lyndon D. Boyer, and Len J. Gawel, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 131,389, Apr. 5, 1971. This application Oct. 10, 1972, Ser. No. 296,357
Int. Cl. C12b *1/00*
U.S. Cl. 195—104 **6 Claims**

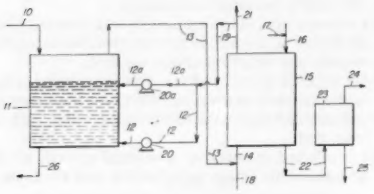
1. In the process for recovering bacteria from fermentation liquids containing said bacteria by filtration, the improvement comprising precoating the filter with a yeast having an average cell diameter of at least 1.25 times the average cell diameter of the bacteria being recovered.

3,846,245

PROCESS FOR GROWING MICROORGANISMS WITH LOW PRESSURE AIR

Edward F. Kondis and John W. Payne, Woodbury, N.J., assignors to Mobil Oil Corporation

Continuation-in-part of abandoned application Ser. No. 859,940, Sept. 22, 1969. This application Dec. 14, 1971, Ser. No. 207,788
Int. Cl. C12b *1/00*
U.S. Cl. 195—109 **15 Claims**



1. A recycle process for growing an aerobic, hydrocarbon-utilizing microorganism comprising:
(a) incubating said microorganism in a culture medium comprising an aqueous mineral nutrient solution and a liquid hydrocarbon as a source of carbon for energy and growth of said microorganism, the amount of said liquid hydrocarbon comprising between 35 and 90 percent by volume of said culture medium,
(b) agitating said culture medium and providing oxygen for the growth of said microorganisms by injecting a minor portion of an oxygen-containing gas into said culture medium at a lower portion thereof at a pressure at least sufficient to overcome the hydrostatic pressure of said culture medium at said point of injection and evaporatively cooling said culture medium by injecting a major portion of an oxygen-containing gas into the upper portion of said culture medium at a pressure sufficient to overcome the hydrostatic pressure of said culture medium at said point of injection,
(c) growing cells of said microorganism over a period of time,
(d) removing oxygen-containing gas and gases formed in step (b),
(e) contacting said oxygen-containing gas and gases of step (d) countercurrently to water at a substantially lower temperature than said gas and gases, and
(f) recycling said oxygen-containing gas to step (b).

3,846,246

CULTIVATION PROCESS FOR MICRO-ORGANISMS

Yoshinori Midorikawa, Yokohama, and Tsuneo Sasanami, Chigasaki, Japan, assignors to Dainippon Ink and Chemicals, Inc., and Japan Gasoline Co., Ltd., both of Tokyo, Japan

Filed Jan. 9, 1974, Ser. No. 431,917
Int. Cl. C12b *1/14*
U.S. Cl. 195—109 **2 Claims**

1. In a process for cultivating microorganisms in which air is blown into the bottom of a bubble column fermentor containing a cultivation medium seeded with the microorganism being grown, to agitate the contents of the column and to improve growth of the microorganism, the improvement which comprises continuously blowing the air into the column so that the superficial gas velocity of the air flowing upwardly through the column is in the range of 14 to 32 cm./sec. during the entirety of the cultivation process, to reduce foaming in the column.

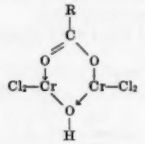
3,846,247

MOISTURE BARRIER

Donald P. Kronish, Rockaway, Lee S. Zuriff, Parsippany, William D. Young, Montclair, and Paul R. Lewandowski, Parsippany, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Sept. 27, 1972, Ser. No. 292,701
Int. Cl. C12k *1/00*
U.S. Cl. 195—127 **3 Claims**

1. In a strip of bibulous material, capable of absorbing fluid by capillary action, said strip being divided into several zones which may be impregnated with various materials, the improvement of which comprises said strip having at least one moisture barrier zone area formed by having impregnated therein a chrome complex coordination compound of



wherein R represents a C_{13} to C_{18} fatty acid radial and having further impregnated over and extending over either side of the same area ethyl methacrylate-methyl acrylate copolymer.

3,846,248

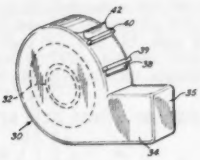
METHOD AND APPARATUS FOR TAKING AND TRANSFERRING BACTERIA SAMPLES

J. Sterling Rose, Denver, Colo., assignor to Birko Chemical Corporation, Denver, Colo.

Continuation of abandoned application Ser. No. 207,110, Dec. 13, 1971, which is a division of application Ser. No. 5,702, Jan. 26, 1970, now Patent No. 3,661,718. This application Oct. 26, 1973, Ser. No. 409,916
Int. Cl. C12k *1/10*
U.S. Cl. 195—127 **6 Claims**

1. An apparatus for gathering bacteria samples from selected surface areas and transferring said samples to a culture, said apparatus comprising:
(a) a roll of adhesive tape, said tape having a non-drying adhesive substance to one side thereof;
(b) housing means surrounding and rotatably supporting said roll of adhesive tape whereby the tape may be selectively unwound from said tape roll through

a slot provided in the periphery of said housing, said housing being enclosed to seal the tape from extraneous bacteria and said slot being narrow to permit close passage of said tape;



(c) projecting mandrel means extending outwardly a substantial distance from said housing adjacent said slot, said mandrel at its outer end including a flat, fully exposed surface, said surface having a width slightly less than the width of the tape and a length the same as the width of the tape to provide a substantially square surface area over which said tape may be wrapped with its adhesive side exposed for pressing said adhesive side against said selected surface area for gathering a bacteria sample and thereafter, pressing the same area of the tape against a culture medium for transferring the bacteria thereto, and

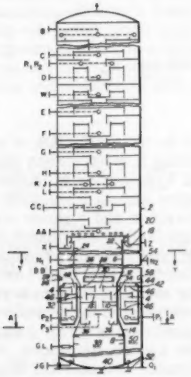
(d) means arranged on the outer surface of said housing adjacent to said slot for severing used portions of the tape from said roll.

3,846,249

METHOD AND APPARATUS FOR SIMULTANEOUSLY FRACTIONATING A PLURALITY OF CRUDE OILS

Horace B. Merriman, South Ascot, England, assignor to Mobil Oil Corporation

Filed Nov. 16, 1973, Ser. No. 416,423
Claims priority, application Great Britain, Nov. 30, 1972, 55,292/72
Int. Cl. B01d *3/30*
U.S. Cl. 196—111 **10 Claims**



1. A fractionating tower for separating at least two different crude oil charge materials simultaneously comprising in combination:

a cylindrical distillation chamber separate from a plurality of adjacent separate distillation cartridge means positioned in the lower portion of the tower,

an elongated rectification section above said distillation means and containing a plurality of vertically spaced apart fractionating trays,

each of said distillation means provided with a plurality of vertically spaced apart distillation trays,

the upper end of each of said distillation means being in open communication with the bottom portion of said rectification chamber and separate therefrom by tray means arranged to channel liquid collected thereon into said cartridge distillation means,

feed inlet means to an upper inner flash zone portion of said cylindrical distillation chamber and feed inlet means to an annular section of said tower above said cartridge distillation means,

spaced apart liquid withdrawal and inlet means throughout the vertical height of said rectification section,

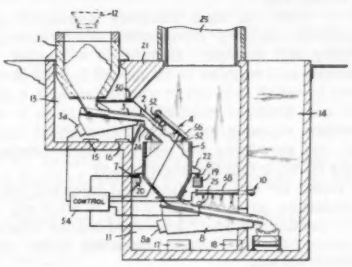
and means for withdrawing residual product from the bottom of said cylindrical distillation chamber separately from the bottom of said annular section.

3,846,250

COKE QUENCHING METHOD AND DEVICE

Johannes Knappstein, Helmut Fritzsche, and Josef Stratmann, Recklinghausen, Germany, assignors to Firma Carl Still Recklinghausen, Recklinghausen, Germany

Continuation of application Ser. No. 174,645, Aug. 25, 1971. This application May 2, 1973, Ser. No. 356,299
Claims priority, application Germany, Sept. 18, 1970, P 20 46 117.0
Int. Cl. C10b *39/08, 39/12*
U.S. Cl. 201—39 **14 Claims**



1. A device for continuously quenching glowing coke, comprising a housing defining a quenching chamber having a chimney, a large size and deep quenching tank in said quenching chamber capable of containing a substantial vertical column of coke, a coke charging device connected to said tank for charging it with coke including a first conveyor along which a layer of coke is moved to said tank, a first water quenching spray located over said tank and also over said conveyer for spray quenching the coke first as it is moved to said tank and thereafter as it is delivered to and also after it is deposited in said quenching tank, a second conveyor connected to the lower end of said quenching tank and extending outwardly of said chamber, a second water quenching spray located over said second conveyor for spray quenching the coke along said conveyor as it leaves said tank and is moved outwardly of said chamber and drive means connected to said first and second conveyors for moving the coke and controlling the speed thereof in accordance with the quantity of coke in said tank.

3,846,251

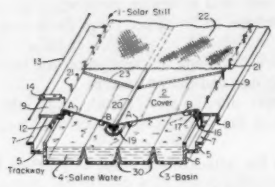
APPARATUS FOR SOLAR DISTILLATION

Harold R. Hay, Menlo Park, Calif.
(2424 Wilshire Blvd., Los Angeles, Calif. 90057)

Filed Mar. 2, 1971, Ser. No. 120,183

Int. Cl. B01d *3/00*

U.S. Cl. 202—234 **15 Claims**



1. An apparatus for the distillation of a liquid comprising a solar still having in combination one or more distilland-retaining components, a cover capable of transmitting radiant energy to convert distilland in said distilland-retaining component to vapor which is condensed to distilland which is collected, and the improvement which comprises:

(a) a rigid cover-supporting transport member which at least in part is adapted for moving said cover as a whole, and

(b) at least one rigid trackway associated with a distilland-retaining component said trackway engaging said transport member in a manner which permits said member to be moved from a first position in which said cover overlies at least a portion of said distilland-retaining component to a second position exposing said portion to ambient overlying air and permitting the return of said member and said cover to said first position and

(c) means for removing from said solar still the liquid condensate so as to maintain in a relatively water-free condition a direct downward bearing relationship between the rigid cover-supporting means and the rigid trackway.

3,846,252

COKE DISCHARGING SYSTEM

William D. Edgar, Allison Park, John D. Sustarsic, McKees Rocks, and Raymond C. Kinzler, Carnegie, Pa., assignors to Koppers Company, Inc.

Original application Dec. 27, 1971, Ser. No. 212,570, now Patent No. 3,788,236. Divided and this application Oct. 26, 1973, Ser. No. 409,948

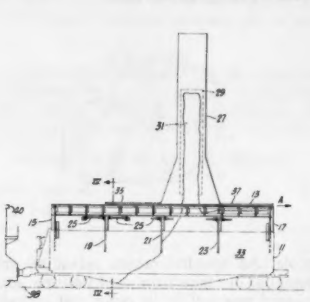
Int. Cl. B61d *3/16*; C10b *39/14*

U.S. Cl. 202—262 **1 Claim**

1. In a system for guiding coke through a coke guide and a quenching car that is adapted for movement by a locomotive for receiving the coke, the improvement comprising:

(a) a plurality of cantilevered baffles installed to one side of and within and extending transversely of said quenching car, with the top edge of said baffles being above the top of said locomotive, said baffles dividing said quenching car into a plurality of coke carrying spaces and being spaced apart from the bottom and from the other side of said car;

(b) means connected to said one of the sides and to each baffle supporting it in a transverse position in said car; and



(c) a cover on said coke guide that extends over at least two of said coke carrying spaces as coke is being received in said quenching car

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3,846,253

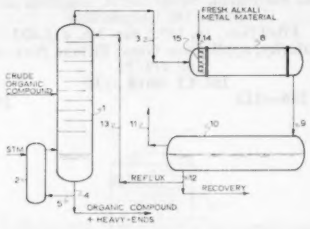
DISTILLATION OF CHLORINATED HYDROCARBONS WITH ALKALI METAL MATERIAL ADDITION

Robert Paul Obrecht, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 208,029

Int. Cl. C07c *19/00, 17/38*

U.S. Cl. 203—7 **14 Claims**



1. In a process for the purification of a chlorinated hydrocarbon containing 2 to 10 carbon atoms wherein the crude chlorinated hydrocarbon is passed to a light-ends fractional distillation zone to fractionally distill the crude chlorinated hydrocarbon and separate an overhead fraction containing low-boiling chlorinated hydrocarbon impurities and water, and a bottoms fraction containing the chlorinated hydrocarbon and a small amount of high boiling impurities, the overhead fraction is passed to a light-ends recovery zone comprising a condensation zone and a light-ends accumulation zone in communication with and following the condensation zone, and wherein the low-boiling chlorinated hydrocarbon impurities are condensed, accumulated, and separated from the water, and recovered, the improvement comprising, feeding an effective amount of an alkali metal material selected from the group consisting of NaOH, KOH, LiOH, Na_2CO_3, K_2CO_3, Li_2CO_3, $NaHCO_3$, $KHCO_3$, $LiHCO_3$, and mixtures thereof in solution to the overhead fraction at a point between the light-ends fractional distillation zone and the light-ends recovery zone.

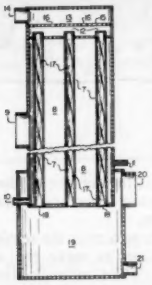
3,846,254

INTERFACE ENHANCEMENT APPLIED TO EVAPORATION OF LIQUIDS

Hugo H. Sephton, 120 York Ave., Kensington, Calif. 94708

Continuation-in-part of applications Ser. No. 845,311, July 28, 1969, now Patent No. 3,648,754, Ser. No. 845,312, July 28, 1969, Ser. No. 845,313, July 28, 1969, Ser. No. 17,559, Mar. 9, 1970, and Ser. No. 52,658, July 6, 1970 all now abandoned. This application Jan. 31, 1972, Ser. No. 222,358

Int. Cl. B01d *1/22, 3/00, 3/08;* F25j *3/02*
U.S. Cl. 203—11 12 Claims



1. A method for increasing the interfacial surface between a liquid phase and a vapor phase, and the rate of evaporation of said liquid phase, to enhance heat and mass transfer therebetween, comprising: selecting a liquid to be evaporated; incorporating a surfactant into said liquid, wherein said surfactant, having within the molecule a lyophilic and lyophobic grouping is a member selected from the group comprising synthetic anionic, cationic and nonionic surfactants consisting of sulphonated ethoxylated linear alcohols, quaternary ammonium compounds, and polyvinyl alcohols; passing said surfactant-containing liquid substantially as a single phase into a flow channel while simultaneously reducing the pressure on said liquid by an amount sufficient to thereby convert a portion of said surfactant-containing liquid to a foamy mixture consisting substantially of liquid phase and vapor phase; partially vaporizing said liquid phase while flowing said liquid and vapor phases through said flow channel; and thereafter separating and condensing said partially vaporized liquid phase.

ERRATUM

For Class 203—15 see:
Patent No. 3,846,488

3,846,255

SEPARATING PHENOL FROM PHENOL-WATER SUBAZEOTROPE BY TREATMENT WITH BRINE

Francis J. Sisk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1972, Ser. No. 240,917

Int. Cl. C07c *29/26*
U.S. Cl. 203—18 17 Claims

1. An apparatus for separating phenol from a composition containing up to about 8% of a salt and a subazeotropic mixture of phenol and water comprising:

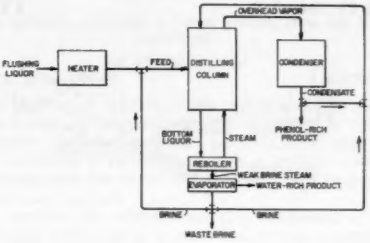
(A) a distilling column for producing an overhead vapor and a bottom liquor;

(B) a condenser for condensing said overhead vapor to form a condensate;

(C) a heater for heating said composition;

(D) a reboiler for boiling a portion of said bottom liquor to produce steam;

(E) an evaporator for evaporating a portion of said bottom liquor to produce brine and a water-rich product; and



(F) connecting means to

(1) mix a first portion of said brine with said composition;

(2) admit said mixed first portion and composition to said distilling column at a point where the phenol-water ratio of said mixture is about equal to the phenol-water ratio of the liquid in said column;

(3) mix a second portion of said brine with at least a portion of said condensate;

(4) admit said mixed second portion and condensate to the top of said distilling column; and

(5) admit at least a portion of said steam from said reboiler to the bottom of said distilling column.

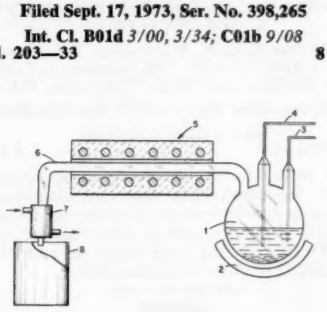
3,846,256

CHEMICAL TRAP

William C. Dietrich, Knoxville, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 17, 1973, Ser. No. 398,265

Int. Cl. B01d *3/00, 3/34;* C01b *9/08*
U.S. Cl. 203—33 8 Claims



1. A method for purifying contaminated nitric acid containing fluoride impurities comprising the steps of:

preparing a solution containing said contaminated acid, aluminum ions and calcium ions;

boiling said solution to give off nitric acid vapor and to react said aluminum with said fluoride impurities to form a non-distillable aluminum fluoride complex; and

condensing said vapor as purified nitric acid.

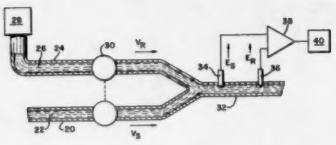
3,846,257

ELECTROCHEMICAL MONITORING

John H. Riseman, Cambridge, and Martin Frant, Newton, Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Original application Jan. 19, 1972, Ser. No. 218,881. Divided and this application Feb. 1, 1974, Ser. No. 438,783

Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 8 Claims



1. A method for continuous electrochemical monitoring of a first liquid flow stream for the presence of an ionic species of interest by a first electrode capable of providing an electrical signal responsively to the activity of said ionic species, said method comprising the steps of

mixing intimately with said first stream at a point upstream from said first electrode, a second liquid flow stream containing a mixture of said ionic species of interest and a second noninterfering ion species in a substantially fixed ratio to one another so that said first electrode provides a first electrical signal responsively to the activity of said species of interest in the mixed flow stream;

generating a second electrical signal with a second electrode responsively to the activity of said second species in the mixed flow stream; and

determining a difference signal between the electrical signals from said electrodes.

3,846,258

PROCESS FOR SOLDER COATING SILICON SOLAR CELLS

Robert Walther Rostron, Washington, D.C., and Peter Ferenc Varadi, Rockville, Md., assignors to Communications Satellite Corporation, Washington, D.C.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,451

Int. Cl. C23b 5/32, 5/48
U.S. Cl. 204—15 5 Claims

1. In a process for manufacturing silicon semiconductor devices the improvement comprising electroplating a solder coating directly onto the electrical contact surfaces of said silicon devices, said electrical contact surfaces being metal layers having a top surface selected from the group consisting of gold, silver and nickel.

3,846,259

SEMICONDUCTOR FABRICATION METHOD FOR ACCOMMODATING REDUNDANCY

Bernard F. Duncan, Fishkill, and David K. Seto, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

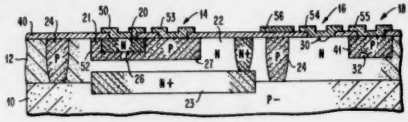
Filed Oct. 18, 1973, Ser. No. 407,732

Int. Cl. C23b 5/48, H01l 7/00
U.S. Cl. 204—15 11 Claims

1. An integrated circuit semiconductor device fabrication method for utilizing semiconductor substrates that potentially embody defective active and passive devices and isolation structure defects, said substrate including a plurality of transistor devices, an overlying insulating layer, and contact openings through the layer exposing regions defined by a PN junction, the method comprising

depositing a blanket layer of an anodizable metal selected from the group consisting of niobium, zirconium, tungsten, tantalum, and aluminum, over said insulating layer,

forming said layer of metal into discrete areas over said contact openings, and areas of the insulating layer,



immersing at least the surface of the substrate embodying the insulating layer and metal layer to an electrolyte solution,

impressing a voltage across the semiconductor substrate and said solution to make the substrate an anode, said voltage applied to back-bias the PN junctions in said substrate in electrical contact with said metal areas,

removing the body from the electrolyte solution,

removing the un-anodized metal layer areas, and

forming an interconnection metallurgy pattern on the surface of said substrate over any remaining anodized metal areas, said anodized areas preventing electrical contact from being formed between said interconnection metallurgy layer and the defective devices and structure in said substrate.

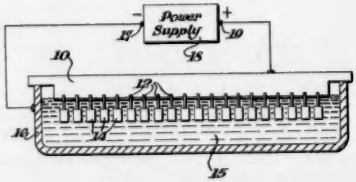
3,846,260

TANTALUM PELLET SYSTEM AND METHODS OF MAKING AND USING THE SAME

Walter J. Bernard, Willamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed May 18, 1973, Ser. No. 361,688

Int. Cl. B23k 31/02; C23b 5/56, 5/68
U.S. Cl. 204—25 7 Claims



1. A tantalum pellet system comprising a bar of composite material consisting essentially of aluminum and from two to fifteen percent alumina by volume; and a plurality of sintered tantalum pellets, each said pellet having a tantalum wire lead extending therefrom, each said lead being welded to said bar, each said lead lying essentially at right angles to the major axis of said bar, all said leads lying essentially in one plane, and the

closest separation between each said pellet and said bar being 3/8 inch or less.

3,846,261

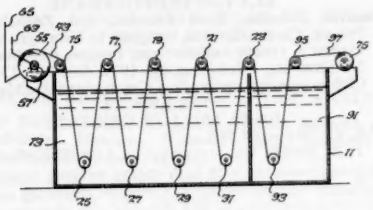
ANODIZING OF METALS

Karl Moeglich, Williamsville, N.Y., assignor to D. A. Hughes Affiliates, Inc., Buffalo, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,766

Int. Cl. C23b *9/02, 11/02;* **C23f** *23/00*

U.S. Cl. 204—56 R **23 Claims**



1. A method of anodizing a metal which comprises passing an electric current through such metal while it is an electrode in an electrolyte and reversing the direction of such current flow from 10 to 130 times per minute.

3,846,262

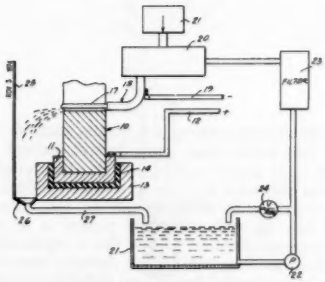
ELECTROCHEMICAL MACHINING CUTOFF

James D. Andrews, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed July 5, 1973, Ser. No. 376,529

Int. Cl. B23p *1/02;* **C01b** *13/04;* **C23b** *5/76*

U.S. Cl. 204—129.6 **6 Claims**



1. An electrode for electromechanical cutting comprising a tube made of electrically conductive metal, and a flatted cylindrical rod of electrically conductive metal fitted within said tube and projecting therefrom, at one end, the flattened portion of said rod projection constituting a cutting surface, said rod having its flat surface providing a path for electrolyte between said flat surface and the inner wall of said tube, the other end of said tube constituting means for introducing electrolyte to said path.

3,846,263

METHOD OF FORMING GRADUATIONS AND OTHER MARKINGS ON A SURFACE-COATED METAL ARTICLE

Edmund Day, Woodhouse 9WP, Sheffield, England

No Drawing. Continuation-in-part of application Ser. No. 200,628, Nov. 19, 1971, which is a continuation of application Ser. No. 831,757, June 9, 1969, both now abandoned. This application Oct. 26, 1973, Ser. No. 410,023

Claims priority, application Great Britain, June 13, 1968, 28,227/68

Int. Cl. C23b *3/04*

U.S. Cl. 204—129.65 **4 Claims**

1. A method of manufacturing a surface-coated metal article having at its surface a desired pattern of visible graduations and other markings, comprising the steps of:

(a) providing a metal blank with a protective metal plating over the entire surface which is to be graduated and marked;

(b) applying an adherent masking compound to the plating surface so as to leave that surface exposed at selected areas in the form of the desired pattern of graduations and other markings, but in which lines defining that pattern are narrower than corresponding lines to be produced in the desired finished pattern;

(c) electrolytically stripping the exposed metal plating at the said pattern lines so as to expose the metal blank therebeneath;

(d) chemically etching the metal blank exposed at the said pattern lines so as to produce a pattern of graduations and markings in a colour contrasting with the colour of the metal plating;

(e) chemically etching away, from the rear, parts of the masked plating which are left overhanging the etched areas of the blank as a result of the preceding etching step; and

(f) removing the masking compound to reveal the plated article bearing the finished pattern of graduations and other markings as defined by pattern lines of desired width.

3,846,264

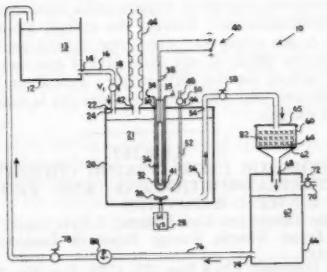
METHOD FOR SYNTHESIZING DICARBAZOLYL CYCLOBUTANE

Jean-Pierre Montillier, Trumbull, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 7, 1973, Ser. No. 422,755

Int. Cl. B01j *1/10*

U.S. Cl. 204—158 R **17 Claims**



1. In a process for synthesizing 1,2-dicarbazolyl cyclobutane, the steps comprising: preparing a 0.5 to 2.5 molar solution of mono vinylcarbazole in a solvent selected from the group consisting of acetone, ethyl acetate and meth-

anol, feeding the solution to a reactor container, agitating the contained solution, exposing the contained solution to a source of ultraviolet light, removing the solution from the container, passing the solution through a filter, collecting the solids and supplying the filtrate back to the reactor container.

3,846,265

PRODUCTION OF SHAPED STRUCTURES

Yasuju Yamaguchi and Yujiro Nakayama, Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo-to, Japan

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,091
Claims priority, application Japan, Dec. 24, 1969, 44/103,451
Int. Cl. C08f *29/50;* **C08b** *21/08;* **B29f** *1/08*
U.S. Cl. 204—159.12 **11 Claims**

1. A process for producing shaped structures which comprises impregnating a loose particulate, cellulosic high-polymer substance of a size larger than 10 mesh, Tyler standard sieve, with 2 to 70% by weight based on said cellulosic high-polymer substance of at least one vinyl monomer, subjecting the resulting loose particular mass consisting essentially of said particulate, cellulosic high-polymer substance impregnated with said vinyl monomer to radiation induced graft polymerization thereby to cause said vinyl monomer to graft-copolymerize onto the particulate, cellulosic high-polymer substance, and then subjecting the resulting reaction product which is still substantially loose and particulate to compression molding under heat and pressure sufficient to fuse the particulate reaction product into a coherent mass whereby the reaction product is formed into a shaped structure.

3,846,266

PROCESS FOR THE PREPARATION OF HYDROPEROXIDE DERIVATIVES OF POLYMERS

Eduard F. J. Duynstee, Sittard, and Maria E. H. A. Mevis, Brunssum, Netherlands, assignors to Stamicarbon N.V., Seerlen, Netherlands

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,641
Claims priority, application Netherlands, Dec. 16, 1970, 7018306
Int. Cl. C08f *27/22*
U.S. Cl. 204—159.2 **17 Claims**

1. A photooxidation process for the preparation of hydroperoxide derivatives of polymers having a saturated polymer backbone composed only of carbon atoms and having C=C unsaturation located in pendant groups, said polymers derived from at least one mono-olefin and at least one non-conjugated diolefin monomer, said process comprising photooxidizing, without substantially autooxidizing said polymers by irradiating said polymers with light capable of catalyzing said reaction and of a wavelength of 3000 to 8000 angstroms in the presence of at least a stoichiometric amount of oxygen and a sensitizing amount of a photosensitizer, wherein the carbon atoms of said C=C bonds either (a) carry two vicinal cis hydrocarbon groups which do not form part of one and the same cyclic system, or else (b) carry at least three hydrocarbon groups, and wherein triplet oxygen is converted to singlet oxygen.

3,846,267

METHOD FOR CROSS-LINKING COPOLYMER OF TETRAFLUOROETHYLENE AND PROPYLENE BY IONIZING RADIATION

Yoneho Tabata and Gen Kojima, Tokyo, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,660
Claims priority, application Japan, Dec. 30, 1970, 46/122,663, 46/122,664, 46/122,665
Int. Cl. B01j *1/00;* **C08d** *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.17 **6 Claims**

1. A method for cross-linking a copolymer of tetrafluoroethylene-propylene which comprises subjecting said copolymer of tetrafluoroethylene-propylene, wherein the ratio of tetrafluoroethylene to propylene in said copolymer is in the range of 90/10 to 20/80 to high energy ionizing radiation in the range of 10^3–10^8 rads in the presence of 0.1 to 20 parts by weight per 100 parts by weight of the copolymer, of a cross-linking accelerator selected from the group consisting of di-allyl amine, di-allyl ether, di-allyl melamine, di-allyl succinate, di-allyl phthalate, di-allyl maleate, tri-allyl amine, tri-allyl cyanurate, tri-allyl phosphate, and tri-allyl isocyanurate.

3,846,268

PROCESS FOR PREPARING 1,1,1-TRICHLOROETHANE

Jindrich Zahalka, Emil Plander, and Zdenek Grac, Prague, Czechoslovakia, assignors to Ustav pro vyzkum, vyrobu a vyuziti radioisotopu, Prague, Czechoslovakia

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,506
Claims priority, application Czechoslovakia, Mar. 26, 1970, 2,006/70
Int. Cl. B01j *1/10;* **C07c** *17/06*
U.S. Cl. 204—163 HE **7 Claims**

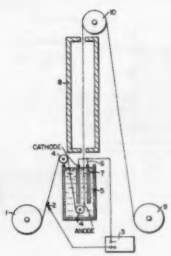
1. A process for preparing 1,1,1-trichloroethane comprising irradiating with high energy ionizing radiation and initiating a chain reaction in a mixture consisting essentially of 1,1-dichloroethane and chlorine with absence of a solvent therefor, at a molar ratio of from about 1:1.5 to about 1:3.5 at a temperature in a range of from about minus 10° C. to about 80° C., under pressure in a range of 0.1 kg./sq. in. to about 15 kg./sq. in. to cause chlorination and without thermal dissociation of said 1,1-dichloroethane and consequent formation of elemental carbon, the ionizing radiation having an energy in a range of from about 0.5 Mev. to about 20 Mev. at a dosing speed in a range of from about 0.5 rad./sec. to about 0.1 Mrad./sec. until chlorination is substantially complete and recovering approximately 90% 1,1,1-trichloroethane.

3,846,269

METHOD FOR CONTINUOUS COATING OF POLYIMIDE BY ELECTRODEPOSITION

Norman E. Martello, Turtle Creek, and David C. Phillips, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1972, Ser. No. 245,455
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **20 Claims**



1. A method of coating a metallic electrical conductor comprising the steps of:

(A) continuously passing positively charged electrical conductor near a negatively charged electrode in a bath of a conducting non-aqueous polyamic acid colloidal electrodeposition composition, said colloidal electrodeposition composition comprising acid salt within a solvent mixture, said acid salt being the reaction product of a polyamic acid and a basic organic nitrogen containing compound, said colloidal

electrodeposition composition comprising about 1 part by weight polyamic acid, about 0.8 to about 1.2 parts by weight basic organic nitrogen containing compound, about 29 to about 37 parts by weight non-aqueous, organic solvent for the acid and about 50 to about 150 parts by weight non-aqueous, organic, non-solvent for the salt, wherein the current density between the conductor and negative electrode is sufficient to electrodeposit a coating on the conductor, and

(B) curing the coating to form a polyimide film on the conductor.

ERRATUM

For Class 204—192 see:
Patent No. 3,846,294

3,846,270

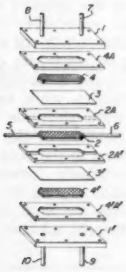
DETECTOR CELL FOR COULOMETRIC ANALYSIS

Giichi Muto, Tokyo, Yoshinori Takata, Hitachi, and Yoshimasa Hamano, Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of abandoned application Ser. No. 37,677, May 15, 1970. This application Oct. 30, 1972, Ser. No. 301,735

Claims priority, application Japan, May 16, 1969, 44/37,393

Int. Cl. G01n *27/28, 27/42*
U.S. Cl. 204—195 T **11 Claims**



1. A detector cell for coulometric analysis of a sample liquid flowing therethrough using controlled potential coulometry, said cell comprising a vessel to be filled with an electrolyte solution, a working electrode arranged in said vessel, said working electrode being porous to allow passage of a sample liquid therethrough and having a plate-like shape, a pair of counterelectrodes each disposed in said vessel on each side of said working electrode, ion exchange membranes for preventing passage of said sample liquid and for allowing passage of ions from said electrolyte solution interposed between each of said counterelectrodes and said working electrode, said counterelectrodes also being porous to allow passage of said electrolyte solution therethrough and each of said ion exchange membranes being in contact with said working electrode and one of said counterelectrodes in such a way that there is substantially no space left between said electrodes and said membrane, sample inlet and outlet means provided in said vessel for leading the sample liquid to and away from said working electrode, electrolyte solution inlet and outlet means disposed in said vessel so that said electrolyte solution is passed through said counterelectrodes and means electrically connected to said counterelectrodes and to said working electrode for applying a constant voltage between said working electrode and said pair of counterelectrodes thereby electrolyzing said sample liquid, and means for measuring through said working electrode and said counterelectrodes the quantity of electricity caused by the electrolyzation of said sample liquid.

3,846,271

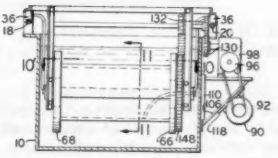
PLATING BARREL WITH SPIRAL SIDES

Albert Singleton, 7360 Brookside Parkway, Middleburg Heights, Ohio 43336

Continuation-in-part of application Ser. No. 91,394, Nov. 20, 1970, now Patent No. 3,668,103, which is a continuation-in-part of abandoned application Ser. No. 86,523, Nov. 3, 1970. This application Jan. 27, 1972, Ser. No. 221,340

The term of this patent subsequent to June 6, 1989, has been disclaimed

Int. Cl. C23b *5/78*
U.S. Cl. 204—213 **17 Claims**



1. In the combination of a barrel assembly for finishing parts adapted for use in electroplating in combination with electrodes, said barrel member being mounted for rotation about its longitudinal axis;

hanger members supporting said barrel and extending downwardly from a horizontally extending frame adapted to rest on a plating tank;

means for rotating said barrel comprising a shaft member rotatably supported from said frame and having a first gear member carried thereon;

a second gear carried from one of said hangers and engaging said first gear, said second gear including a flat side in constant direct contact with a flat surface on one of said hangers of a size at least equal to the size of the gear;

a third gear connected to said drum and engaging said second gear;

said shaft having at least one end extending outwardly from said gear for engagement with drive means; means on the end of said frame for locating said assembly on a plating tank; the improvement comprising:

the barrel having a pair of spaced apart barrel end defining members;

a mounting means supporting said end defining members for selective rotation in first and second directions about a common axis extending therebetween; and

a plurality of side panel members positioned about said axis and radially outwardly thereof, said panel members extending between said end defining members to enclose a working space, each said side panel member having generally axially extending terminal side edge portions with the side edge portions of circumferentially adjacent panels being radially spaced and

circumferentially overlapping to provide a plurality of circumferentially spaced openings.

3,846,272

CATHODIC PLUG

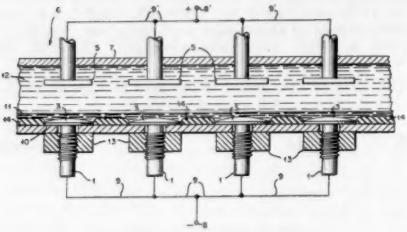
Herman H. Tiedemann, Linden, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,653

Claims priority, application Germany, Sept. 11, 1971, P 21 45 507.2

Int. Cl. C22d 1/04

U.S. Cl. 204—219 3 Claims



1. An improved electrolytic cell including: a cell adapted to accept a series of anode members and corresponding cathodes provided with cathode members; and an insulating medium disposed at the lower portion of such cell; said cathode member being provided with a spherical portion having a flat contact surface for directly contacting the interior wall of the cell and a threaded shank portion depending therefrom, extending through the cell wall to the exterior of said cell; fastening means engaging said threaded shank to fixedly position said cathode member with respect to said cell in a manner enabling said cathode member to co-act with a layer of mercury disposed at the lower portion of said cell to thereby form a mercury cathode.

3,846,273

METHOD OF PRODUCING VALVE METAL ELECTRODE WITH VALVE METAL OXIDE SEMICONDUCTIVE COATING HAVING A CHLORINE DISCHARGE CATALYST IN SAID COATING

Giuseppe Bianchi, Milan, Italy, Vittorio de Nora, Nassau, Bahama Islands, and Patrizio Gallone and Antonio Nidola, Milan, Italy, assignors to Electronor Corporation, Panama City, Panama

No Drawing. Continuation-in-part of applications Ser. No. 690,407, Dec. 14, 1967, and Ser. No. 771,665, Oct. 29, 1968. This application May 10, 1971, Ser. No. 141,946

Int. Cl. B01k 3/04

U.S. Cl. 204—290 F 15 Claims

1. The method of producing an electrode of a valve metal base from the group consisting of titanium and tantalum which comprises applying a coating mixture in liquid form to said valve metal base, which on heating forms an oxide layer on said base, 39.2% to 78% of which comprises an oxide of titanium, 6.4% to 47.5% of which comprises an oxide of a platinum group metal and 1% to 17.7% of which forms an oxide of a doping metal from the group consisting of tin, vanadium, lanthanum, cobalt, and mixtures thereof, the said percentages being based upon the weight of the metals in said oxides, applying said coating in several separate layers and heating the coating on the valve metal base between the application of each layer.

3,846,274

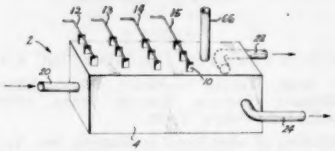
ELECTROPERISTALTIC ION PUMP

John F. Gifford, P.O. Box 117, Corrales, N. Mex. 80748

Filed Apr. 10, 1972, Ser. No. 242,348

Int. Cl. B01k 5/00; C02b 1/82

U.S. Cl. 204—299 27 Claims



1. In a fluid flow cell defining a fluid flow passage having a series of spaced electrodes disposed therein, forming a series of successively interconnected flow regions therebetween, electrical pulse generating means connected to apply a series of successively timed electrical pulses across the series of flow regions, between the individual electrodes of pairs of electrodes whose respective electrodes lie on opposite sides of successive regions in one transverse direction of the series of electrodes, means operative between the successive time phases of the pulses, to neutralize the polarity of the relatively forward electrode of the pair of electrodes on the opposite sides of one flow region, in the aforesaid transverse direction of the series of electrodes, while establishing a polarity in the relatively forward electrode of the pair of electrodes on the opposite sides of the next successive flow region, which is identical to the polarity which characterized the aforesaid relatively forward electrode of the aforesaid one flow region, during the last preceding pulse, and means for passing the fluid into the passage and recovering a portion thereof, adjacent opposite ends of the flow regions.

3,846,275

COAL LIQUEFACTION PROCESS

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,502

Int. Cl. C10g 1/06

U.S. Cl. 208—10 13 Claims

1. A process for the liquefaction of coal which comprises contacting the coal, at a temperature of from about 150° C. to about 375° C. and a pressure of from about 10 to about 300 atmospheres for a contact time corresponding to from 1 to 600 minutes or a liquid hourly spaced velocity of about 0.16 to about 1.0, with from about 100 wt. percent to about 1,000 wt. percent of water, a reducing gas selected from the group consisting of hydrogen, carbon monoxide and mixtures thereof in an amount of from about 0.5 to about 175 scf. per pound of carbon in the coal, and from about 0.01 wt. percent to about 1,000 wt. percent of a catalyst consisting essentially of a catalytic sulfur compound selected from the group consisting of alkali metal and ammonium sulfides, sulfites and thiosulfates.

3,846,276

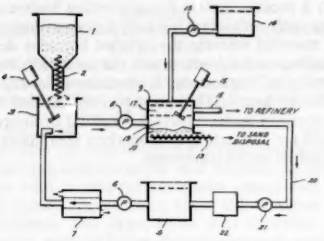
PROCESS FOR SEPARATING BITUMEN FROM TAR SAND RECOVERED FROM DEPOSITS BY MINING

Clarence O. Walker, Richmond, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 18, 1973, Ser. No. 371,203

Int. Cl. C10g *1/04*

U.S. Cl. 208—11 20 Claims



1. A process for separating bitumen and sand from tar sand material recovered from subterranean deposits by mining comprising:

contacting the tar sand material with an aqueous solution comprising an inorganic polyphosphate substance plus an alkalinity agent, the temperature of said solution being greater than 100° F.

3,846,277

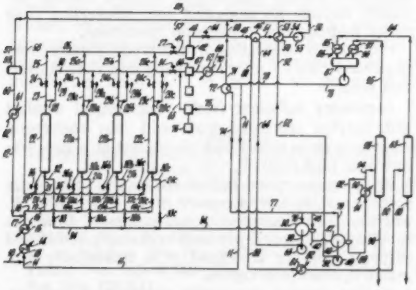
DEWAXING OF OILS

Herbert A. McIntosh, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,784

Int. Cl. C10g *43/08*

U.S. Cl. 208—31 9 Claims



1. The method of separating wax from a wax-bearing oil which comprises:

(a) mixing said wax-bearing oil with a dewaxing solvent and a liquid refrigerant at an initial pressure at least sufficient to maintain said refrigerant in liquid phase;

(b) reducing the pressure on the resulting oil-solvent-refrigerant mixture in a chilling operation effecting evaporation of said refrigerant and concomitant cooling of said mixture to a temperature at which wax crystallizes forming a first slurry of wax in remaining oil-solvent mixture and a volatilized high pressure refrigerant vapor;

(c) further reducing the pressure on said resulting oil-solvent-refrigerant mixture effecting further evaporation of a second portion of said refrigerant at a low pressure and concomitant further cooling of said mixture to a temperature at which additional wax crystallizes in said first slurry forming a volatilized low pressure refrigerant vapor;

(d) filtering said first slurry from step (c) thereby forming (i) a first filter cake of slack wax containing wax crystals and occluded oil-solvent mixture and (ii) a first filtrate containing dewaxed oil and solvent;

(e) cooling said volatilized high pressure refrigerant vapor, at a pressure no higher than the pressure of its evaporation, in indirect heat exchange against said first filtrate thereby forming a cooled high pressure refrigerant;

(f) condensing said cooled high pressure refrigerant thereby forming a liquid high pressure refrigerant;

(g) passing said liquid high pressure refrigerant to said mixing step;

(h) separating dewaxed oil from said first filter cake; and

(i) separating deoiled wax from said first filter cake.

3,846,278

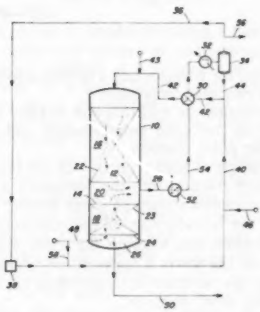
PRODUCTION OF JET FUEL

Morgan C. Sze, Upper Montclair, and James W. Reilly, Westfield, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of application Ser. No. 177,362, Sept. 2, 1971, now Patent No. 3,767,562. This application July 12, 1973, Ser. No. 378,617

Int. Cl. C10g *23/04, 23/16*

U.S. Cl. 208—57 20 Claims



1. A process for producing jet fuels by the two-stage hydrogenation of a hydrocarbon feed having a boiling range within the temperature range of about 135° F. to about 550° F. and substantially free of sulfur-containing impurities, comprising the steps of:

(a) passing the feed in cocurrent contact with a hydrogen-rich gas through a first hydrogenation zone operated at a temperature of from about 250° F. to about 575° F. and at elevated pressure in contact with a catalyst comprising a platinum group metal to at least partially hydrogenate the feed;

(b) removing from the first hydrogenation zone a gas phase effluent comprising hydrogen and vaporized

liquid materials, and a partially hydrogenated liquid hydrocarbon effluent;

(c) further hydrogenating the liquid hydrocarbon effluent in a second hydrogenation zone operated at a temperature of from about 200° F. to about 500° F. at elevated pressure by passing a hydrogen-rich gas into the second hydrogenation zone counter-currently to the liquid hydrocarbon effluent, in contact with a catalyst comprising nickel; and

(d) drawing off from the second hydrogenation zone a gas phase effluent comprising hydrogen and vaporized liquid material and a liquid phase effluent comprising jet fuel.

3,846,279

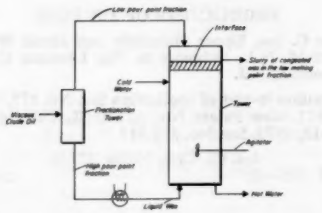
METHOD FOR MAKING AND SLURRYING WAX BEADS

Lavaun S. Merrill, Jr., Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sept. 18, 1972, Ser. No. 289,918

Int. Cl. F17d *1/16*

U.S. Cl. 208—93 **40 Claims**



1. A process for transporting a hydrocarbon mixture as a slurry, the process comprising:

(1) fractionating the hydrocarbon mixture into at least a relatively low pour point fraction and a relatively high pour point fraction,

(2) introducing at least a portion of the relatively high pour point fraction into the bottom of a tower having a continuous stream of water flowing countercurrent to the introduction of the relatively high pour point fraction and wherein the water enters the top portion of the tower a temperature at least about 5° F. below the congelation temperature of the relatively high pour point fraction,

(3) imparting sufficient turbulence to the high pour point fraction to cause it to be dispersed into the water phase within the tower and permitting the dispersed particles of the fraction to stay in contact with the water for sufficient time to substantially congeal the fraction,

(4) permitting the resulting congealed particles to move upwardly through the tower and pass through an interface in the tower, the interface being the junction between the relatively low pour point fraction being introduced into the top of the tower and the water within the tower,

(5) withdrawing at least a portion of the resulting slurry of the congealed particles in the low pour point fraction at about the interface and thereafter transporting the slurry at a temperature below about the solution temperature of the congealed particles in the low pour point fraction.

3,846,280

METHOD OF IMPROVING A DENSE FLUID BED CATALYST REGENERATOR USED IN CONJUNCTION WITH A RISER HYDROCARBON CONVERSION OPERATION

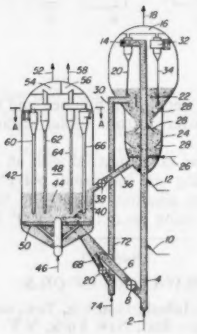
Hartley Owen, Belle Mead, and Edward J. Demmel, Pitman, N.J., assignors to Mobil Oil Corporation

Filed Sept. 10, 1973, Ser. No. 395,815

Int. Cl. B01j *11/68;* **C10g** *11/18*

U.S. Cl. 208—120 **8 Claims**

1. In a process system for converting hydrocarbons by cracking with a fluidizable catalyst comprising crystalline zeolite material wherein the catalyst becomes deactivated with carbonaceous deposits and the catalyst is reactivated by burning of carbonaceous deposits in a regeneration zone thereby heating the catalyst to an elevated hydrocarbon conversion temperature, the method of improving the operation for converting hydrocarbon feed materials comprising sulfur which comprises,



(a) passing a sulfur containing hydrocarbon feed with suspended freshly regenerated catalyst therein upwardly through an elongated riser conversion zone under hydrocarbon conversion conditions,

(b) cyclonically separating hydrocarbon vapors from suspended catalyst after traversing said riser conversion zone,

(c) combining sufficient freshly regenerated catalyst with catalyst separated from said riser conversion zone to form a mixed bed of catalyst at a temperature of at least 1050° F.,

(d) stripping the mixed bed of hot catalyst with stripping gas at said temperature of at least 1100° F. whereby sulfur compounds are separated from the catalyst and stripped products containing sulfur and stripping gas are combined with cyclonically separated hydrocarbon vapors,

(e) passing catalyst containing deactivating carbonaceous deposits from said stripping zone to an adjacent catalyst regeneration zone containing a dense fluid bed of swirling catalyst, said catalyst introduced to an upper portion of said bed of catalyst and tangentially thereto to influence swirl to said bed of catalyst,

(f) passing oxygen containing regeneration gas upwardly through said bed of catalyst in said regeneration zone,

(g) said regeneration zone provided with a plurality of separate cyclonic separation zones arranged within the upper periphery thereof with at least the first

three cyclonic separation zones above said tangentially introduced catalyst and downstream therefrom in the direction of catalyst swirl being connected together for a separate recovery of regeneration flue gases from the remaining flue gas cyclonic separation and recovery zones, separately recovering flue gases as above provided,

and passing regenerated catalyst from said regeneration zone to each of said riser conversion zone and said stripping zone.

3,846,281

PLATINUM-MAGNESIUM REFORMING CATALYST

Joseph K. Mertzweiller, Baton Rouge, La., assignor to Exxon Research and Engineering Company

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,835
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **10 Claims**

1. A process for improving the octane quality of naphthas comprising contacting the said naphtha at reforming conditions with a catalyst composite comprising porous inorganic oxide support, from about 0.3 to about 3.0 wt. percent halogen, and from about 0.01 to about 5.0 wt. percent of a hydrogenation-dehydrogenation component comprising a Group VIII noble metal and from about 0.1 to about 5.0 wt. percent of a Group IIA metal halide which is added as an additional component to the composite.

3,846,282

TRIMETALLIC CATALYTIC COMPOSITE AND USES THEREOF

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,864
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 **9 Claims**

1. A process for reforming a gasoline fraction which comprises contacting the gasoline fraction, at a temperature of about 800 to about 1100° F., a pressure of about 0 to about 1000 p.s.i.g., a liquid hourly space velocity of about 0.1 to about 10 $hr.^{-1}$, and a mole ratio of hydrogen to hydrocarbon of about 1:1 to 20:1, with a catalytic composite of a halogen component, a platinum or palladium component, an iridium component and a nickel component on a porous carrier material, said composite containing, on an elemental basis, about 0.1 to about 3.5 wt. percent halogen, about 0.01 to about 2 wt. percent platinum or palladium, about 0.01 to about 2 wt. percent iridium and about 0.01 to about 5 wt. percent nickel.

3,846,283

BIMETALLIC CATALYTIC REFORMING WITH HALOGEN ADDITION

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 201,576, Nov. 23, 1971, which is a continuation-in-part of application Ser. No. 807,910, Mar. 17, 1969, now Patent No. 3,740,328. This application July 5, 1973, Ser. No. 376,841
The term of this patent subsequent to July 10, 1990, has been disclaimed
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **18 Claims**

1. A process for catalytically reforming a gasoline fraction, which process comprises continuously introducing the gasoline fraction, a hydrogen stream and a halogen additive said halogen additive being added in an amount corresponding to about 0.1 to about 100 wt. p.p.m. of said gasoline fraction into a reforming zone and therein contacting the resulting mixture at reforming conditions with a catalytic composite comprising a combination of a platinum group component, a tin component and a halogen component with a porous carrier material, wherein the components are present in amounts sufficient to result in the composite, containing on an elemental basis, about 0.01 to about 2 wt. percent platinum, group metal, about 0.01 to about 5 wt. percent tin and about 0.1 to about 3.5 wt. percent halogen, wherein the tin component is uniformly dispersed throughout the porous carrier material in a particle size which is less than 100 Angstroms in maximum dimension, wherein substantially all of the platinum group component is present as an elemental metal and wherein substantially all of the tin component is present in an oxidation state above that of the elemental metal.

3,846,284

HYDROCONVERSION PROCESS

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,083
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **5 Claims**

1. A hydrodesulfurization process which comprises contacting a hydrocarbon feedstock in a reaction zone at a temperature between 500 and 900° F., a pressure between 100 and 3,000 p.s.i.g. and in the presence of hydrogen gas, with a catalyst prepared by steps comprising chemically coprecipitating Group VI and VIII metals and alumina from a solution of aluminum hydroxy-chloride as the alumina precursor, said precipitation being effected by adding ammonia to said solution.

3,846,285

REGENERATIVE PROCESS FOR THE SELECTIVE HYDRODESULFURIZATION OF PETROLEUM RESIDUALS UNDER MILD CONDITIONS

Harold Beuther, Gibsonia, Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 21, 1973, Ser. No. 334,476
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **11 Claims**

1. A process for hydrodesulfurizing a feed residual oil comprising contacting the feed oil and hydrogen with a hydrosulfurization catalyst at a temperature of about 600 to about 1,000° F., a liquid hourly space velocity of from about 0.1 to about 10 volumes of feed oil per volume of catalyst per hour and a hydrogen feed rate of from about 500 to about 10,000 standard cubic feet of hydrogen per barrel of feed oil, said catalyst comprising a minor amount of Group VI and Group VIII metals with a major amount of an alumina carrier containing less than 1 weight percent silica, said alumina carrier composited of a first alumina obtained by drying and calcining a crystalline alumina trihydrate and a second alumina obtained by drying and calcining a crystalline alumina hydrate containing from 1.2 to 2.6 mols of water of hydration per mol of Al_2O_3, the alumina trihydrate comprising an amount from about 2 to about 35 weight percent of the total of said hydrates which increases the specific hydrodesulfurization activity of said catalyst.

3,846,286

HYDRODESULFURIZATION CATALYST

John Joseph Phillipson, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of abandoned application Ser. No. 22,046, Mar. 23, 1970. This application Apr. 4, 1973, Ser. No. 347,726
Claims priority, application Great Britain, Apr. 10, 1969, 18,387/69
Int. Cl. B01j *11/06, 11/22;* **C10g** *23/02*
U.S. Cl. 208—216 **8 Claims**

1. A catalyst precursor composition which consists essentially of at least 50% by weight alumina at least partly

in the form of sheets of fine crystallites, said sheets being of the order of 20–30 Angstrom units in thickness and up to 60 Angstrom units in length in the plane of the sheets, 1–20% by weight of a metal oxide from Group VIB of the Periodic Table, 0.5–15% by weight of a base metal oxide from Group VIII of the Periodic Table, and 1–10% of a Group II–A metal oxide, said composition being further characterised by being in the form of compressed shapes having a density under 1.2 and a mean crushing strength of at least 280 p.s.i.

3,846,287

HYDRODESULFURIZATION

Joseph Jaffe and Echol M. Reed, Jr., Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 23, 1973, Ser. No. 382,085

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **6 Claims**

1. A process for hydrodesulfurizing a heavy oil feedstock which comprises contacting the heavy oil, under hydrodesulfurization reaction conditions, with a hydrodesulfurization catalyst comprising a Group VIb metal or metal compound and a Group VIII metal or metal compound, and an amorphous alumina carrier containing 50 to 2000 p.p.m. calcium, wherein the carrier is prepared by mixing a calcium compound with hydrated alumina and water, thereby forming a paste; extruding the paste; and calcining the resulting extrudate.

3,846,288

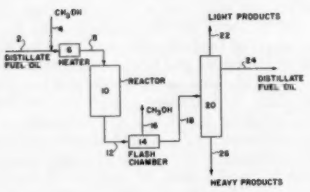
ACID NUMBER REDUCTION OF HYDROCARBON FRACTIONS USING A SOLID CATALYST AND METHANOL

Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 5, 1973 Ser. No. 376,566

Int. Cl. C10g *17/00*

U.S. Cl. 208—263 **15 Claims**



1. A process for treating a hydrocarbon fraction having a carboxylic acid content as measured by an acid number in excess of 0.1 to produce a product having a reduced carboxylic acid content as measured by an acid number of less than 0.1 which comprises:

contacting said petroleum fraction and a lower alcohol having the formula: ROH where R is a lower alkyl group having from 1 to 3 carbon atoms and wherein the amount of said lower alcohol is at least that amount stoichiometrically required to reduce the acid number of the hydrocarbon fraction from in excess of 0.1 to less than 0.1;

at a temperature from 200° F. to the thermal cracking temperature of said petroleum fraction; and

with a solid catalyst having a surface area greater than 15 $m.^2/g.$ comprising an oxide of a metal selected from the group consisting of the metals from Group IVB; aluminum; germanium; tin; lead; zinc; and cadmium.

3,846,289

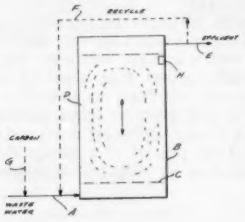
WASTE TREATMENT PROCESS

John S. Jeris, Yonkers, and Carl Beer, Sand Lake, N.Y., and James A. Mueller, Teaneck, N.J., assignors to Ecolotrol, Inc., Bethpage, N.Y.

Filed June 19, 1972, Ser. No. 264,346

Int. Cl. C02c *1/04*

U.S. Cl. 210—8 **6 Claims**



1. Process for denitrifying waste water containing nitrified waste passing the waste water through a bed of microorganisms, said bed adapted to pass suspended solids present in said waste therethrough, comprising:

(a) generating an upflow fluidized bed of denitrifying biota, said biota attached to a solid particulate carrier, said carrier having a particle size from about 0.2 to 3 millimeters and a specific gravity of at least about 1.1, by passing waste water upwardly through said bed at a flow rate of at least about 6 gallons per minute per square foot of bed to buoy the particles to overcome the influence of gravity and to impart to said bed particles movement within the bed;

(b) providing sufficient amounts of a carbon source in said waste water to allow said nitrified wastes to be converted to nitrogen by said biota;

(c) maintaining said bed at a temperature sufficient to permit biota activity; and

(d) removing excess biota growth formed on said carrier during said process such that significant quantities and generally greater than about 90% by weight of said nitrified waste is reduced from a volume of waste water treated in said bed in about 10 minutes or less and floc produced by removal of excess growth is carried from the process without interference with the efficient operation thereof.

3,846,290

RECLAMATION OF HYDROCARBON CONTAMINATED GROUND WATERS

Richard L. Raymond, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

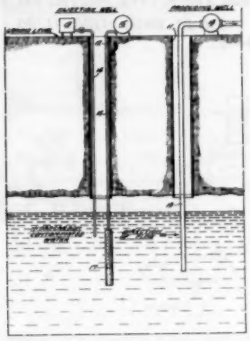
Filed Sept. 29, 1972, Ser. No. 293,621

Int. Cl. C02c *5/10*

U.S. Cl. 210—11 **7 Claims**

1. A process for purifying an underground water supply containing hydrocarbon contaminants by biodegrading said hydrocarbon contaminants in said underground water supply without the addition of microorganisms which comprises providing oxygen and nutrients com-

prised of nitrogen, phosphorus and potassium for hydrocarbon-consuming microorganisms normally present in said underground waters, said nutrients and oxygen being



introduced through wells in the area of said contaminated supply, and removing water from a well located within said contaminated area until hydrocarbons are reduced to an acceptable level.

3,846,291

PROCESS OF AND INSTALLATION FOR PURIFYING SEWAGE

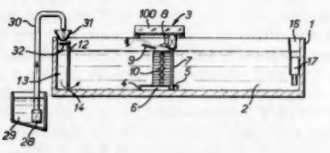
Christian Brucker, Vico, Yvelines, France

Filed Aug. 7, 1972, Ser. No. 278,228

Claims priority, application France, Aug. 9, 1971, 7129033

Int. Cl. C02c *1/08*

U.S. Cl. 210—14 **19 Claims**



1. A sewage treatment plant comprising a basin having an upstream end and a downstream end in which there is a flow of progressively treated sludge toward the downstream end, a sewage intake located at the upstream end, a treated water outlet located at the downstream end, a travelling bridge mounted for reciprocating movement along the basin between the upstream and downstream ends, sludge aerating and recycling means mounted on the travelling bridge forming a sludge circuit including a suction intake located adjacent to the bottom of the basin, suction pump means for drawing said sludge from the bottom of the basin through the suction intake, and nozzle means constructed and arranged for receiving said sludge from said pump means and aerating it by spraying it into the air, the effective direction of the sprayed sludge being toward the upstream end of the basin whereby the sludge is continually recycled in an upstream direction counter to the downstream flow of the progressively treated sewage.

3,846,292

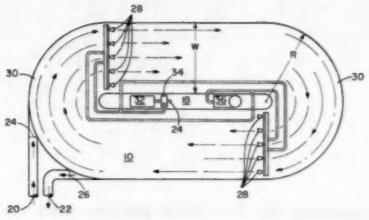
EJECTOR AERATED OXIDATION DITCH FOR WASTE TREATMENT

Archie R. Lecompte, Jr., Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of application Ser. No. 138,906, Apr. 30, 1971, which is a continuation-in-part of application Ser. No. 75,620, Sept. 25, 1970, both now abandoned. This application Oct. 5, 1973, Ser. No. 403,904

Int. Cl. C02c *1/06*

U.S. Cl. 210—14 **5 Claims**



1. A system for treating waste liquid containing settleable solids and B.O.D. comprising,

an oxidation ditch for confining and retaining the waste liquid and defining a continuous, substantially closed flow path through which the confined liquid is moved and providing for a liquid depth of at least about 10 feet,

a plurality of ejectors for aerating the waste liquid in the ditch to reduce the B.O.D. thereof and for simultaneously moving the waste liquid through the flow path, the ejectors being constructed and arranged so that they are solely capable of circulating the waste liquid throughout the ditch at a velocity of at least 0.3 foot per second to maintain the settleable solids in suspension,

said ejectors each comprising a housing having a waste liquid inlet for receiving a stream of pressurized waste liquid, a high velocity waste liquid nozzle in communication with said waste liquid inlet, an air inlet for receiving air, a mixing chamber in communication with said waste liquid nozzle and said air inlet and a discharge outlet for discharging a high velocity waste liquid-air jet,

said ejectors being arranged to discharge the waste liquid-air jets at least about 9 feet below the surface of the waste liquid in the oxidation ditch and in the direction of movement thereof.

3,846,293

LIQUID WASTE TREATMENT

Sylvester J. Campbell, 9317 Alton St., Philadelphia, Pa. 19115

Filed Feb. 22, 1972, Ser. No. 228,103

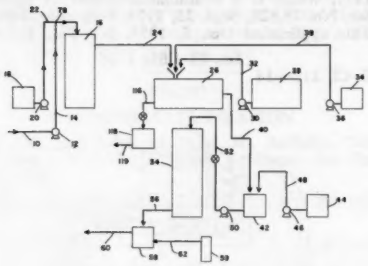
Int. Cl. C02b *1/20;* C02c *1/40*

U.S. Cl. 210—18 **20 Claims**

1. A process for purifying a liquid aqueous waste containing suspended particles and dissolved solids and impurities having a biochemical oxygen demand and chemical oxygen demand comprising the sequential steps of

adding a first charge-density reducing agent, ferric chloride, to the liquid waste in an amount sufficient to reduce the charge-density of particles contained therein to about −6 mv. to about 0 mv.;

adding a second charge-density reducing agent, lime, to the liquid waste in an amount sufficient to impart thereto a charge-density of about —2 mv. to about +5 mv. and thereby effect flocculation of particles therein; and



separating the flocculated particles from the liquid waste thereby removing impurities from the liquid waste;

wherein prior to the addition of said lime to said waste, sufficient time is allowed to pass for particles in said waste to coagulate into denser particles through the action of said ferric chloride, and wherein substantially all of the particles in the waste are suspended in said waste when said lime is added thereto, and wherein said waste containing said ferric chloride and prior to the addition thereto of said lime is acidic.

3,846,294

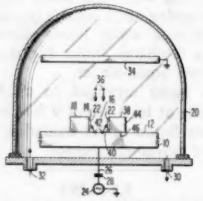
METHOD OF COATING THE INTERIOR WALLS OF THROUGH-HOLES

John Louis Vossen, Somerville, N.J., assignor to RCA Corporation

Filed Jan. 11, 1974, Ser. No. 432,457

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **4 Claims**



1. A method for selectively coating interior walls of through-holes in a substrate with a thin film of a material by sputtering, comprising:

(a) providing a target with a surface comprised of said material to be sputtered,

(b) disposing against said surface of said target a substrate in which the through-holes to be coated are formed,

(c) including a glow discharge in an ionizable gas plasma, and

(d) sputtering said material from said target surface onto said through-hole walls.

3,846,295

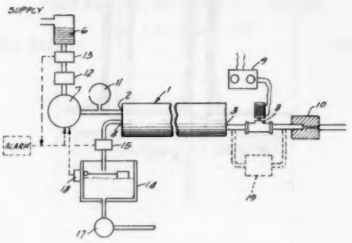
METHOD AND APPARATUS FOR USE IN WATER PURIFICATION BY REVERSE OSMOSIS

Erich L. Gibbs, Wilmette, Ill., assignor to Ultrascience Incorporated, Skokie, Ill.

Filed Apr. 6, 1972, Ser. No. 241,731

Int. Cl. B01d *13/00, 31/00*

U.S. Cl. 210—23 **20 Claims**



1. A method of solvent purification from an impure solvent by reverse osmosis, comprising the steps of supplying impure solvent at one side of a membrane, applying a pressure to said impure solvent sufficiently greater than the osmotic pressure thereof to produce a reverse osmotic flow through said membrane, and withdrawing concentrate forming at the input side of the membrane in a predetermined cyclic pulsed flow whereby the solvent flow across the input face of said membrane is likewise pulsed, restricting flow during periods of maximum flow to a predetermined amount which will not materially impair flow through the membrane, but which is operative to provide flow turbulence over the membrane surface with sufficient flushing thereof adequate for prevention of excessive boundary layer formation at said membrane and suspension of particulate material in said concentrate, and intermediate periods of at least a lesser concentrate flow, any flow during said intermediate periods being substantially uniform and materially less than that necessary to provide such a flow turbulence and flushing action, and said intermediate periods having a predetermined duration such that any boundary layer formation and particulate disassociation during such intermediate periods is materially countered by the maximum flow and period duration of the maximum flow period.

3,846,296

WASTE WATER PURIFICATION SYSTEM

William C. Hay, 941 Jefferson Ave., East Point, Ga. 30344

Filed Dec. 9, 1971, Ser. No. 206,444

Int. Cl. B01d *15/06*

U.S. Cl. 210—27 **14 Claims**

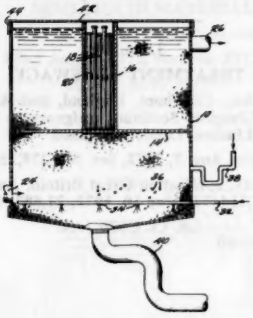
1. A method of treating liquid organic waste effluent comprising the steps of:

(a) removing by filtration a major portion of solid waste materials from the effluent,

(b) passing the filtered effluent through a bed of activated carbon which causes the organic waste material to be absorbed by said bed,

(c) continuously exposing the bed of activated carbon to gamma radiation to continuously induce oxidation of said organic waste material, and

(d) continuously passing a gaseous medium containing oxygen through said bed of activated carbon to



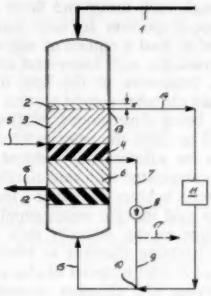
provide oxygen for combination with said organic waste to continuously regenerate said bed.

3,846,297
CHROMATOGRAPHY
Wallace Malcolm Thaw, 30 Woodside Drive, Moraga, Calif. 90065
No Drawing. Filed Oct. 12, 1972, Ser. No. 297,014
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C **10 Claims**

1. A method of fractionating liquid or dissolved high molecular weight organic compounds on an industrial scale comprising, in a liquid-solid chromatographic column wherein there is provided in a non-aqueous fluid phase, a solid adsorbent of silica gel having a mesh size of less than about 100 mesh, a pore volume of more than 0.40 cc./gram, an average pore diameter of more than 22 angstroms and of durable composition; wetting the silica gel with a mild desorber to regenerate and prevent channeling in the gel; contacting said silica gel with said organic compounds in a pressure range of atmospheric to 1000 p.s.i.g.; adding solvents in sequence to the column to wash said silica gel and desorb the separated higher molecular weight compounds therefrom.

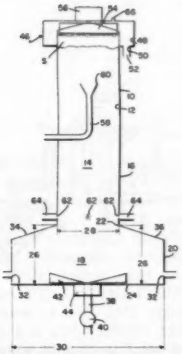
3,846,298
METHOD OF TREATING (REGENERATING) USED UP ION EXCHANGE PARTICLES
Georg Plura, Bergneustadt, Germany, assignor to L. & C. Steinmuller G.m.b.H., Gummersbach, Germany
Filed Dec. 18, 1972, Ser. No. 316,360
Claims priority, application Germany, Dec. 21, 1971, P 21 63 346.5
Int. Cl. B01d *15/06*
U.S. Cl. 210—33 **3 Claims**

1. A method of continuously treating used up ion exchange particles according to which the ion exchange particles to be treated form a bed having nearly constant volume and comprising at least a first bed section, a second bed section, and a third bed section, a fourth bed section, and a fifth bed section, said bed sections being consecutively arranged upon each other, which includes the steps of: supplying used up ion exchange particles to said fifth bed section for preliminary regeneration; adding regenerating medium to said bed at the boundary zone between said second second and third bed sections for regenerating used up ion exchange particles; adding wash fluid to said first bed section for washing out regenerated ion exchange particles; withdrawing from the boundary zone between said third and fourth bed sections a fluid stream comprising ion exchange particles, regenerating medium, and wash fluid; adding used up ion exchange particles to said fluid stream; supplying said fluid stream and said added used up ion exchange particles to said fifth bed section; withdrawing spent regenerating medium and wash fluid from the boundary zone between said fourth and fifth bed sections; and withdrawing regenerated ion exchange particles from between said first and second



bed sections with a partial stream of said wash fluid, the above steps creating a pressure differential between said fourth and fifth bed sections and said first, second, and third bed sections, thereby causing said bed in its entirety to move counter to the direction of flow of said wash fluid.

3,846,299
CLARIFYING APPARATUS AND METHOD FOR INFLUENT WATERS
Eugene L. Krasnoff, Princeton, N.J., assignor to Improved Machinery Inc., Nashua, N.H.
Filed Dec. 13, 1972, Ser. No. 314,796
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 **17 Claims**



1. Apparatus for clarifying an influent water, comprising a vessel containing a clarifying chamber including a first portion and a second portion adjacent the lower end of said first portion, said chamber second portion communicating with such lower end of said chamber first portion and said chamber second portion in at least one transverse direction being of greater dimension than such lower end and projecting laterally outwardly of at least one side of such lower end, influent water supply means operatively associated with said chamber first portion for

supplying an influent water thereto at a location spaced above such lower end thereof, solid material discharge means operatively associated with said chamber first portion for discharging solid material from adjacent the upper end thereof, liquid discharge means operatively associated with said chamber second portion for discharging liquid from said chamber second portion at a location spaced outwardly of at least said one side of such lower end of said chamber first portion whereby liquid passing downwardly through such lower end flows outwardly in said chamber second portion to said liquid discharge means, the area of at least a section of said chamber second portion intermediate such lower end and said liquid discharge means, cross-wise to the flow of liquid outwardly through said chamber second portion to said liquid discharge means, being dimensioned relative to the area of such lower end to cause the velocity of the outwardly flowing liquid to be substantially reduced, gas supply means operatively associated with said clarifying chamber for supplying gaseous bubbles thereto at a location spaced vertically between said influent water supply means and said liquid discharge means, whereby such gaseous bubbles rise in said clarifying chamber to effect flotation of solid material to said solid material discharge means, and wall means overlying said chamber second portion laterally outwardly of such lower end of said chamber first portion for directing rising gaseous bubbles and buoyant solid material in said chamber second portion towards said chamber first portion for such flotation, said wall means causing said chamber second portion to progressively downwardly increase in dimension in said one transverse direction.

3,846,300

WATER PURIFICATION

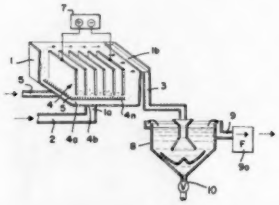
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Inc., Yokohama, Japan

Filed Jan. 10, 1972, Ser. No. 216,423

Claims priority, application Japan, Jan. 11, 1971, 46/425; Feb. 24, 1971, 46/9,544

Int. Cl. C02c *5/12*

U.S. Cl. 210—47 **7 Claims**



1. A method of treating impure water containing agglomeratable solids, comprising the steps of introducing into the water at least one flocculating agent by galvanically autosolubilizing a metal forming said agent from a porous body disposed in contact with the water to produce a flocculant, said body consisting at least 70% by weight of aluminum, the balance being predominantly a component selected from the group which consists of magnesium, calcium, sodium, lithium, potassium, titanium, iron, silicon, carbon and combinations thereof; separating said flocculant from the water, said body being cast from a melt having a thermally decomposable hydride incorporated therein, the hydride being thermally decomposed to form voids in the body and the body being permitted to cool to retain the voids therein, said body being disposed in contact with the water between a pair of electrodes; and applying an electric current across said electrodes to promote solubilization of said body in said water.

3,846,301

TREATMENT OF SEWAGE

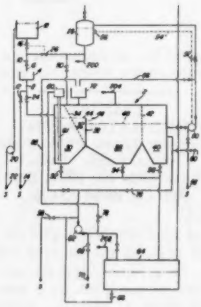
John H. Stokes, Caterham, England, and Alexander G. Cousins, Glasgow, Scotland, assignors to The Sanitas Company Limited, London, England

Filed Aug. 7, 1972, Ser. No. 278,251

Claims priority, application Great Britain, Aug. 10, 1971, 37,514/71; May 10, 1972, 21,883/72

Int. Cl. C02b *1/36*

U.S. Cl. 210—60 **11 Claims**



1. A method of treating sewage comprising the steps of:

(a) flushing sewage from a plurality of receivers by means of flushing liquid, thus forming a mixture of flushing liquid, and sewage,

(b) separating the mixture into a first part which has a high content of solid matter and a low content of liquid and into a second part which has a high content of liquid,

(c) after step (b) separating, at a separation zone, said second part into a solid matter portion and a liquid portion,

(d) maintaining a caustic alkali chemical composition in said liquid portion at a concentraton not exceeding one percent such that said liquid portion is disinfectant and deodorant,

(e) maintaining a bleaching action in said liquid portion so as to have a decolorising effect,

(f) using said liquid portion as said flushing liquid for repetition of step (a),

(g) after step (b) conveying the first part away from said separation zone to a comminution zone remote from said separation zone and subjecting said first part to mechanical reduction of the size of the pieces of the solid matter thereof,

(h) providing a storage zone remote from said separation zone for storage of the solid matter;

(i) after step (g), conveying the first part high in solid content from said comminuting zone to said storage zone whereby substantially all of the solid matter of said first part is subjected to the chemical content of the liquid content thereof and is thereby broken down, dispersed, sterilised and deodorised; and

(j) transferring said solid matter portion separated from said second part to said storage zone.

3,846,302

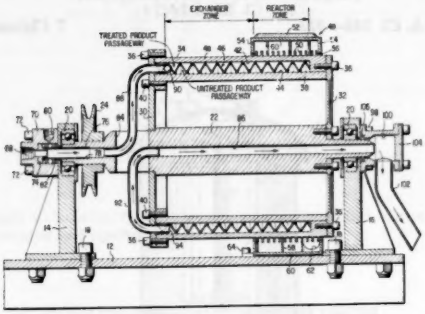
APPARATUS FOR HEAT TREATING LIQUID OR SEMI-LIQUID MATERIAL

Roy E. Crocker, Kailua, Hawaii

Filed Aug. 2, 1972, Ser. No. 277,279

Int. Cl. B01d 35/18

U.S. Cl. 210—71 14 Claims



1. An apparatus for heat treating raw material comprising:

(a) a support,

(b) shaft means rotatably mounted on said support,

(c) spaced-apart concentric cylinder means mounted on said shaft means,

(d) reactor means for supplying heat to said cylinder means,

(e) coil means located between said cylinder means, said coil means having an inlet means for introducing said raw material to said coil means and an outlet means for removing treated material from said coil means, said coil means being so constructed that said treated material preheats said raw material before said treated material is removed at said outlet means, and

(f) means for rotating said cylinder means and said coil means to create a centrifugal force on said raw material and said treated material.

3,846,303

METHOD AND APPARATUS FOR CONTROLLING FLOW TO A BATTERY OF FILTERS

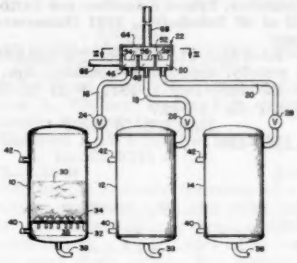
Joseph H. Duff, Basking Ridge, N.J., assignor to Gulf Degremont, Inc., Liberty Corner, N.J.

Filed Oct. 15, 1973, Ser. No. 406,306

Int. Cl. B01d 23/20

U.S. Cl. 210—73 6 Claims

1. Apparatus for control of flow of liquid through a battery of filters connected in parallel and having filter media therein comprising a splitter box located above the filters, said splitter box having an inlet compartment and a plurality of outlet compartments, means for delivery of liquid to be filtered into the inlet compartment, a plurality of weirs within the splitter box, said weirs being constructed and arranged whereby there is a weir between the inlet compartment and each of the outlet compartments, a separate liquid feed line connecting each of the filters in the battery with one of the outlet compartments whereby liquid in an outlet compartment flows to a single filter, vent means opening from the upper end of the splitter box constructed and arranged to allow the level of the liquid to rise a height above the weirs at least one-half the height of the weirs above the filter media.



3,846,304

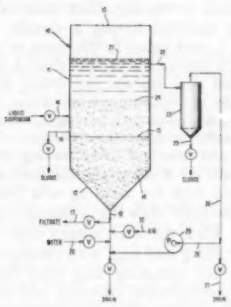
METHOD FOR CLEANING LIQUID FILTER BEDS

Paul W. Garbo, 48 Lester Ave., Freeport, N.Y. 11520

Filed Jan. 20, 1972, Ser. No. 219,268

Int. Cl. B01d 23/24

U.S. Cl. 210—80 7 Claims



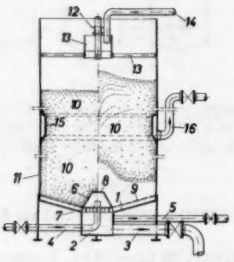
1. In the method of cleaning by backwashing a liquid filter bed formed of solid hard particles having a specific gravity appreciably greater than that of the matter removed from the liquid filtered through said bed, the improvement which comprises initially recycling the liquid to be filtered upwardly through said bed as back washing liquid while passing a gas upwardly through said bed, the combined flow of said liquid and said gas being controlled to cause at least 25% expansion of the settled volume of said bed and vigorous random movement of said solid particles without entrainment of said solid particles in said liquid thereby effecting suspension and entrainment in said liquid of matter previously deposited in said bed, said recycling of said liquid together with suspended and entrained matter being conducted by pumping said liquid from above said bed into the bottom of said bed, partially removing said suspended and entrained matter from said liquid while said liquid is being passed by said pumping from above said bed into the bottom of said bed, and then discarding said liquid in which the remainder of said matter is suspended and entrained prior to resuming the use of said bed for filtration.

3,846,305

APPARATUS FOR THE FILTRATION AND BIOLOGICAL PURIFICATION OF CONTAMINATED WATER

August Schreiber, Erhard Schreiber, and Berthold Schreiber, all of 45 Bahnhofstr., 3001 Hannover-Vinnhorst, Germany

Filed Mar. 31, 1972, Ser. No. 240,024
Claims priority, application Germany, Apr. 1, 1971, P 21 16 000.9; July 1, 1971, P 21 32 728.6; Oct. 8, 1971, P 21 50 345.7
Int. Cl. B01d 35/00
U.S. Cl. 210—150 16 Claims



1. Trickling filter for the filtration and biological purification of contaminated water comprising, at least one water-tight tank containing filler material consisting of wear-resisting material having a specific gravity of not greater than 1, and being in the form of small elements each having a grain size of less than 6 mm., said tank being provided with storage distributor devices near the top thereof for distributing contaminated water over said filler material, and said tank having a bottom wall sloping toward a discharge chamber provided therebelow into which the water purified after having trickled through said filler material is diverted, aeration means near the bottom of said tank for aerating said filler material upwardly therethrough while the contaminated water trickles through said filler material, means near the bottom of said tank for filling said tank with rinsing water upwardly therethrough for cleansing said filler material of any sludge or microorganisms covering said elements, the incoming rinsing water effectively buoying up said filler material in said tank, means on said tank for circulating said filler material with the rinsing water and contaminated water within said tank, means on the side wall of said tank for the removal of the sludge and microorganisms covering said elements, grid means located above said bottom wall for preventing said filler material from discharging into said chamber, and further grid means in said tank adjacent said removal means for preventing said filler material from being removed therethrough.

3,846,306

BONDING OF ENZYMES, ENZYME DERIVATIVES AND OTHER BIOLOGICALLY ACTIVE MOLECULES TO POLYMERIC MATERIALS

Sidney Alan Barker and Charles John Gray, Birmingham, England, assignors to Koch-Light Laboratories Limited, Buckinghamshire, England

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,855
Claims priority, application Great Britain, Dec. 11, 1970, 59,145/70
Int. Cl. B01d 15/08; C07g 7/02
U.S. Cl. 210—198 C 13 Claims

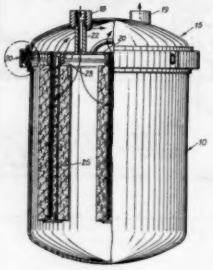
1. In a hydrophilic water-insoluble polymer having attached thereto biologically-active molecules along its molecular chains the improvement which comprises repeating disulphide, thicl or thiolactone side groupings on said molecular chain wherein the biologically-active molecules are reacted with said side groupings to attach said biologically-active molecules to the polymer, said improved polymer characterized by being regenerable or readily activated.

3,846,307

FILTER HOUSING WITH REMOVABLE DIAPHRAGM AND SEAL MEANS THEREFOR

Raymond M. Petrucci, Middlebury, and Arthur W. Schnick, Meriden, Conn., assignors to AMF Incorporated

Filed June 25, 1973, Ser. No. 373,251
Int. Cl. B01d 29/24
U.S. Cl. 210—323 7 Claims



1. In a filter, the novel combination comprising:
a cover member and a sump member forming a housing for the filter, each of said members having an open end;
a rigid diaphragm supported on the open end of said sump member dividing the space within the formed housing into two separate chambers;
annular seal means encircling said diaphragm and when placed under compression holding said diaphragm against movement and simultaneously sealing against leakage from said housing between said members and from one of said chambers to the other between said housing and diaphragm; and
clamp means releasably connecting the open ends of said members together and placing said annular seal means under compression between said members when connected together by said clamp means.

3,846,308

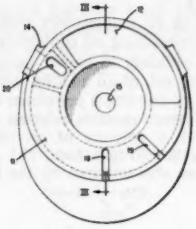
SKIP BRIDGE VALVE

Harry Richard Ahlquist, Star Route Box 219, Rabbitt, Minn. 55706

Continuation-in-part of application Ser. No. 110,003, Jan. 27, 1971, now Patent No. 3,724,668. This application Mar. 28, 1973, Ser. No. 345,612
Int. Cl. B01d 33/26
U.S. Cl. 210—331 10 Claims

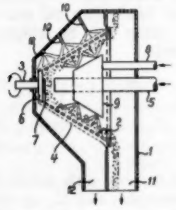
1. In a vacuum filter apparatus having at least one multiported valve head in communication with vacuum lines and compressed air lines, said valve head having a vacuum valving mechanism comprising at least a wear plate and stationary bridge plate having a drying port said wear plate being affixed to a plurality of tubes disposed within a hollow shaft member and rotatable therewith in sliding engagement with said stationary bridge plate said filter apparatus also having removal means for

removing a collected filter cake; the improvement wherein said stationary bridge plate has, in addition to said drying port, at least one skip bridge port, said skip bridge port comprising means forming an aperture through said bridge plate directly connecting the wear plate and a vacuum reservoir, and means associated with said skip bridge



port to control the degree of vacuum pressure exerted through said aperture means.

3,846,309
ROTARY CONICAL STRAINER DRUM
Lars Karl Johan Ehnstrom, Tullinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Mar. 15, 1972, Ser. No. 234,824
Claims priority, application Sweden, Mar. 23, 1971, 3,723/71
Int. Cl. B01d *21/26*
U.S. Cl. 210—370 **4 Claims**



1. The combination of a cone-shaped strainer drum made of perforated sheet material and mounted for rotation about the axis of said cone, means for supplying a liquid to be strained to the interior of said drum, said drum having a relatively wide end for discharging solids strained from said liquid, a conical outer strainer concentrically surrounding said drum and rotatable therewith, said conical outer strainer widening in the same direction as said conical drum and having a less rigid envelope surface and a smaller hole size than said drum, and nozzles positioned to spray liquid against the outside of said outer strainer, said nozzles being positioned to spray said outer strainer along a generatrix of its envelope surface and thereby vibrate the outer strainer during rotation of said drum and outer strainer said drum being sufficiently sturdy to receive, carry and transmit a sludge quantity of substantial weight, said outer strainer being capable of straining off smaller particles than said drum.

ERRATA

For Classes 210—471 and 210—512 see: Patents Nos. 3,846,320 and 3,846,321

3,846,310
HYDRAULIC FRACTURING METHOD USING GELLED HYDROCARBONS
Robert J. Blackwell and Donald M. Kehn, Houston, Tex., and Thomas A. Whitney, Linden, N.J., assignors to Esso Production Research Company
Filed Mar. 3, 1972, Ser. No. 231,525
Int. Cl. E21b *43/26*
U.S. Cl. 252—8.55 R **16 Claims**

1. A method for the hydraulic fracturing of a subterranean formation penetrated by a well which comprises injecting into said formation at a pressure sufficient to open a fracture therein a liquid hydrocarbon containing (a) a gelling agent which includes first alkoxide having the general formula MOR and a second alkoxide having the general formula $M'(OR')_3$ wherein M is selected from the group consisting of Group IA metals, M' is selected from the group consisting of Group IIIA elements, and R and R' are independently selected from the group consisting of C_1 to C_{25} hydrocarbyl radicals, said gelling agent being present in a concentration sufficient to substantially increase the viscosity of said liquid hydrocarbon; and (b) a drying agent selected from the group consisting of calcium chloride, zinc chloride, calcium oxide, barium oxide, phosphorus pentoxide, calcium sulfate, sodium sulfate, magnesium sulfate, sodium hydroxide, potassium hydroxide and boric anhydride in an amount sufficient to prevent premature decomposition of said gelling agent.

3,846,311
METHOD FOR REMOVING ELEMENTAL SULFUR FROM WELLS AND FLOWLINES
Shelby P. Sharp and Lamar F. Sudduth, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.
No Drawing. Continuation-in-part of abandoned application Ser. No. 178,435, Sept. 7, 1971. This application Mar. 26, 1973, Ser. No. 345,051
Int. Cl. C23g *5/02;* **E21b** *43/00*
U.S. Cl. 252—8.55 B **9 Claims**

1. A method for improving the solvent power of a liquid dialkyl disulfide for elemental sulfur which comprises reacting a normally liquid saturated unsubstituted aliphatic amine with said disulfide, said amine being employed in an amount not in excess of about 10 weight percent based on the weight of said disulfide, said reaction being effected in the substantial absence of free sulfur under one of the following conditions:

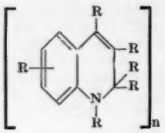
(1) permitting the amine-disulfide mixture to stand at a temperature of about 75° F. for a period of from about 30 to about 90 days,

(2) subjecting said mixture to a temperature of from 75° to about 100° F. for a period of from about 10 to about 25 days.

3,846,312
GREASE THICKENED WITH COATED FIBROUS ASBESTOS
Edward A. Cross, Houston, Tex., and Richard L. Frye, Baton Rouge, La., assignors to Texaco Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 740,084, June 26, 1968. This application Apr. 30, 1970, Ser. No. 33,534
Int. Cl. C10m *5/02, 5/20*
U.S. Cl. 252—13 **7 Claims**

1. A grease composition having superior shear stability, water-resistance and extreme pressure properties, comprising from about 65 to 90 weight percent of lubricating mineral oil from about 35 to 10 weight percent of a

thickening system made up of 25 to 9 weight percent of fibrous asbestos and about 10 to 1 weight percent of polymeric coating agent having recurring units included within the structures:



wherein *n* the average degree of polymerization ranges from 2 to about 20, and R is selected from the group consisting of hydrogen, alkyl radicals and hydroxylated alkyl radicals, said alkyl radicals containing from 1 to 6 carbon atoms.

3,846,313

LUBRICANT COMPOSITION CONTAINING DISPERSED ALKALI METAL BORATE

Marc J. Sims, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 31, 1972, Ser. No. 285,158
Int. Cl. C10m *1/10*
U.S. Cl. 252—18 **17 Claims**

1. A composition comprising an oil of lubricating viscosity having dispersed therein from 1 to 60 weight percent based on the weight of the composition of particulate hydrated alkali metal borate and from 0.3 to 2 weight percent of a C_{16} to C_{20} aliphatic hydrocarbon alcohol.

3,846,314

GREASE THICKENED WITH UREIDO COMPOUND AND ALKALINE EARTH METAL ALIPHATIC CARBOXYLATE

John L. Dreher, El Cerrito, and Crawford F. Carter, Pleasant Hill, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 244,864, Apr. 17, 1972. This application May 23, 1973, Ser. No. 363,210
Int. Cl. C10m *5/02, 5/16, 5/20*
U.S. Cl. 252—18 **19 Claims**

1. A grease composition comprising a major part of a lubricating oil containing (1) from 0.5 to 10 weight percent of a mono or polyurea compound or mixture of mono or polyurea compounds having from 1 to 8 ureido groups and having a molecular weight between about 375 and 2,500 and (2) from 3 to 30 weight percent of an alkaline earth metal aliphatic monocarboxylate having from 1 to 3 carbons, wherein the weight ratio of alkaline earth metal carboxylate to mono and polyurea compounds is from 1 to 15.

3,846,315

GREASE THICKENED WITH POLYUREA METAL SALTS AND ALKALINE EARTH METAL ALIPHATIC MONOCARBOXYLATE

Garth M. Stanton, San Anselmo, and John L. Dreher, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 27, 1973, Ser. No. 374,212
Int. Cl. C10m *5/20, 5/22, 7/30*
U.S. Cl. 252—18 **15 Claims**

1. A grease composition comprising a major portion of a lubricating oil and minor grease thickening portions of (1) an alkali or alkaline earth metal salt of a polyurea sulfonate or carboxylate compound having at least 2 ureido groups and having a molecular weight between about 250 and 2500 and (2) an alkaline earth metal aliphatic monocarboxylate having from 1 to 3 carbons.

3,846,316

LUBRICANTS CONTAINING REACTION PRODUCTS OF PETROLEUM SULFONIC ACIDS AND ORGANIC NITROGEN POLYMERS

Sidney Schiff and Gerald R. Kahle, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Dec. 3, 1968, Ser. No. 780,887, now abandoned. Divided and this application Apr. 30, 1971, Ser. No. 139,176
Int. Cl. C10m *1/40, 3/34*
U.S. Cl. 252—33 **10 Claims**

1. A lubricating oil composition comprising a major proportion of a lubricating oil containing a small but effective amount, sufficient to impart increased detergency to said lubricating oil, of an additive which is a reaction product formed by reacting a petroleum sulfonic acid reactant and a polymer reactant selected from the group consisting of (a) a polymer of an ethylenically substituted heterocyclic nitrogen base, (b) a polymer of a 1,2-alkylene imine characterized by the formula

wherein R″ is hydrogen or an alkyl radical containing up to 14 carbon atoms, and having a degree of polymerization within the range of 5 to 2,000, and (c) mixtures of said polymers (a) and (b), said reacting being carried out under reaction conditions and at reactant ratios such that said reaction product is formed.

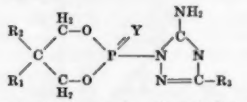
3,846,317

LUBRICANT COMPOSITIONS CONTAINING PHOSPHORAMIDATE DERIVATIVES

Vincent G. Lintzenich, Collinsville, Ill., assignor to Shell Oil Company

No Drawing. Continuation-in-part of application Ser. No. 115,868, Feb. 16, 1971, which is a continuation-in-part of application Ser. No. 803,078, Feb. 27, 1969, and a continuation-in-part of application Ser. No. 200,217, Nov. 18, 1971, which is a continuation-in-part of application Ser. No. 66,606, Aug. 24, 1970, all now abandoned. This application May 9, 1972, Ser. No. 251,624
Int. Cl. C10m *1/46, 1/48*
U.S. Cl. 252—46.7 **8 Claims**

1. A lubricant composition consisting essentially of a major amount of lubricating oil and a minor amount, from 0.01% to about 3% by weight, of a compound having the formula



wherein R_1 and R_2 are each selected from the group consisting of hydrogen and C_{1-20} alkyl groups, R_3 is selected from the group consisting of hydrogen, alkyl, aryl and alkaryl, said [hydrocarbyl] alkyl, aryl and alkaryl groups having from 1 to 12 carbon atoms, and Y is selected from the group consisting of oxygen and sulfur.

3,846,318

ANTIOXIDANT AND EXTREME PRESSURE LUBRICATING OIL ADDITIVE

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Apr. 11, 1973, Ser. No. 350,223
Int. Cl. C10m *1/38*
U.S. Cl. 252—47.5 **3 Claims**

1. A composition comprising a major amount of an oil of lubricating viscosity and from 0.02 to 5 percent by weight of the product of the process which comprises contacting an alkylphenol, mercaptobenzothiazole and an aldehyde in the mole ratio of about 1–2:1:1–2 at a temperature of from about 250° to about 300° F. for a period of 2–20 hours followed by the addition of sulfur monochloride in the amount of 0.25–2 moles per mole of mercaptobenzothiazole at 100–200° F.

3,846,319

DIOXAN-CONTAINING ALUMINUM LUBRICANT

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 27, 1973, Ser. No. 345,400
Int. Cl. C10m *1/20*; C10m *3/14*
U.S. Cl. 252—49.5 10 Claims

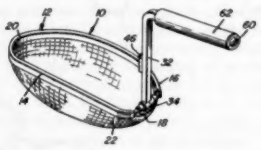
1. A process for lubricating aluminum or aluminum alloys which comprises applying to the surface of the aluminum or aluminum alloys a lubricant comprising a major portion of a carrier fluid selected from the group consisting of water, aqueous emulsions, halogenated hydrocarbons and oxygenated hydrocarbons and from 0.1 to 15 volume percent of a C_{10}-C_{30} hydrocarbyl-1,3-dioxan.

3,846,320

APPARATUS FOR REMOVING GREASE FROM POT LIQUIDS

Elizabeth G. Edwards, 1024 Fairwin Ave., Nashville, Tenn. 37216

Filed May 25, 1973, Ser. No. 363,813
Int. Cl. B01d *35/28*
U.S. Cl. 210—471 3 Claims



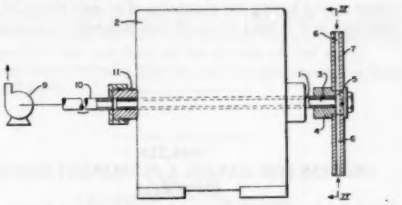
1. An apparatus for skimming grease from pot liquids, said apparatus comprising a generally planar open frame including a first generally straight side and a second arcuate side opening toward said first side, one pair of convergent ends of said sides being joined together and the other pair of ends of said sides being spaced apart and joined by means of a generally straight segment of the periphery of said frame extending therebetween, said straight segment comprising, at least in part, a pivot shaft portion, a shallow cup-shaped mesh secured across said frame and opening outwardly to one side thereof, an L-shaped handle including first and second generally right angled elongated members interconnected at one pair of corresponding ends, said L-shaped handle being disposed in a plane at generally right angles relative to the medial plane of said frame and having the free end of one of said elongated members pivotally supported from said pivot shaft portion for oscillation relative thereto about an axis extending longitudinally through said pivot shaft portion and disposed generally normal to the plane of said handle and transverse to said one elongated member, said one elongated member and said pivot shaft portion including releasable coacting latch means operative to retain said one elongated member in a first position disposed generally normal to the medial plane of said frame and with said one elongated member projecting outwardly of said one side of said frame, the other elongated member projecting outwardly of the free end of said one elongated member in a direction extending away from said one pair of ends of said sides.

3,846,321

CENTRIFUGAL FILTERING APPARATUS

John P. Strange, Murrysville, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 30, 1973, Ser. No. 365,120
Int. Cl. B01d *21/26*
U.S. Cl. 210—512 7 Claims



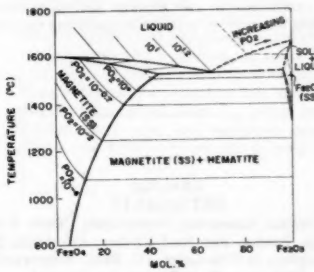
1. Apparatus for separating foreign particles from a fluid, comprising separating means rotatable on an axis and provided with a plurality of radial passages open at their outer ends, means for rotating said separating means at a substantially constant speed, and means communicating with the inner ends of the passages for continuously drawing fluid inwardly through them at a rate insufficient to overcome the centrifugal force acting on foreign particles carried into the passages by the fluid, whereby the fluid leaving the inner ends of said passages will be free of said particles.

3,846,322

METHOD OF PRODUCING LARGE SINGLE CRYSTALS OF MIXED FERRITES

Mitsuo Sugimoto, No. 77, 3-chome Nakamachi, Nerima-ku, Tokyo, and Hiroshi Watanabe, 211, Tsuchidoi, Sendai-shi, Miyagi-ken, Sendai, both of Japan

Continuation of Ser. No. 816,889, April 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 456,666, May 18, 1965, abandoned. This application June 11, 1970, Ser. No. 48,848
Claims priority, application Japan, May 23, 1964, 39-28833; May 23, 1964, 39-28834
Int. Cl. C04b *35/30*, *35/38*
U.S. Cl. 252—62.62 3 Claims



1. A method for producing a large single crystal of a mixed ferrite which is a member selected from the group consisting of manganese-zinc ferrite and nickel-zinc ferrite with a spinel structure, containing zinc oxide in the amount of between 2 and 30 mole per cent, which comprises melting raw materials for the ferrite in a heating zone at a temperature above 1,600°

to 1,800°C in an atmosphere consisting essentially of oxygen having a partial pressure of oxygen of from 1.5 to 20 atmospheres to reduce the content of ferrous ion in the molten ferrite to less than 7 wt. percent of the total amount of iron and subsequently cooling the molten ferrite at the rate of 2° – 8°C/hour by slowly moving said molten ferrite relative to and out of said heating zone in an atmosphere consisting essentially of oxygen having a partial pressure of oxygen of from 1.5 to 20 atmospheres to carry out the crystal growth, whereby a single crystal having the dimension of at least about 20 mm in diameter and at least about 30 mm in length is produced.

3,846,323

PROCESS FOR MAKING A PERMANENT MAGNET MATERIAL

Friedrich Josef Esper, Leonberg, and Gerhard Kaiser, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 25, 1972, Ser. No. 283,702

Claims priority, application Germany, Sept. 1, 1971, 2143718

Int. Cl. C04b *35/00*

U.S. Cl. 252—62.63 **5 Claims**

1. A process of making a permanent magnet material, comprising the steps of forming a particulate mixture including a substance selected from the group consisting of the oxides and oxide furnishing compounds of Fe, a substance selected from the group consisting of the oxides and oxide furnishing compounds of Ba, Sr and Pb, and a substance selected from the group consisting of the oxides and oxide furnishing compounds of Sb, As and P; sintering said mixture in air so as to effect reaction of said substances and form a first product of the formula $MO \cdot (Fe_2O_3)_6$wherin Fe^{+3} ions in said first product are replaced by the ions of at least one of said Sb, As and P to such an extent as to cause a lowering of the temperature coefficient of the reversible temperature change of the magnetic saturation moment from that of $MO \cdot (Fe_2O_3)_6$ wherein no replacement of the Fe^{+3} ions is effected, said ions of said Sb, As and P having a valence in excess of +3, and said M of said $MO \cdot (Fe_2O_3)_6$ being at least one of said Ba, Sr and Pb; heat treating said first product within a temperature range of 1,200° to 1,350°C so as to cause evolution of part of the oxygen of said first product and so as to convert said ions of Sb, As and P to their trivalent state thereby forming a second product; comminuting said second product to single domain size; and tempering the comminuted second product in a non-oxidizing atmosphere within a temperature range of 750° to 1,200°C.

3,846,324

DETERGENTS

Frank Lohmann, Arlesheim, Switzerland; Claude Eckhardt, Mulhouse, France, and Karl Kleiber, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

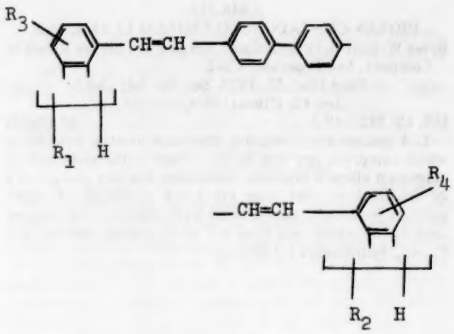
Filed June 19, 1972, Ser. No. 263,901

Claims priority, application Switzerland, June 25, 1971, 9353/71

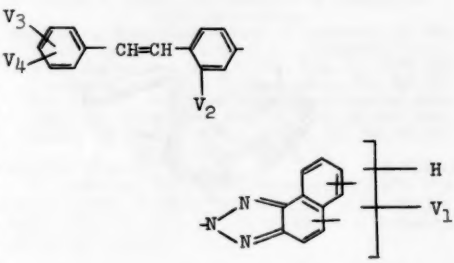
Int. Cl. C11d *7/54*

U.S. Cl. 252—95 **10 Claims**

1. Dry, free-flowing detergent compositions consisting essentially of a surfactant, a chlorine donor which releases hypochlorite ions on contact with water and a fluorescent whitener selected from the group consisting of a distyryldiphenyl whitener of the formula



wherein R_1 represents a sulpho group or the salts thereof, R_2 represents hydrogen, chlorine, methyl, methoxy or a sulpho group or the salts thereof, R_3 and R_4 independently represent hydrogen, chlorine, methyl or methoxy and a stilbylnaphthotriazole whitener of the formula



wherein V_1 represents hydrogen or a sulpho group, or the salts thereof, V_2 represents hydrogen, chlorine, a cyano group, a carboxyl group, or a sulpho group or the salts thereof, V_3 represents hydrogen, methoxy or a sulpho group or the salts thereof, and V_4 represents hydrogen or chlorine, with at least one of the substituents V_1 to V_4 standing for a sulpho group or the salts thereof, the particles of which are encased by a watersoluble organic coating agent, the weight ratio between said fluorescent whitener and said water-soluble organic protecting agent being between 9:1 and 1:99.

3,846,325

ANTI-POLLUTION AND DETERGENT COMPOSITION

Francis Gerard Flynn, Toronto, and Philip Harrhy Jones, Aurora, Ontario, both of Canada, assignors to Torau Company, Aurora, Ontario, Canada

Continuation-in-part of Ser. No. 16,942, March 5, 1970, abandoned. This application June 21, 1972, Ser. No. 264,736

Int. Cl. C11d *7/56*

U.S. Cl. 252—99 **9 Claims**

1. An anti-pollution and detergent composition consisting essentially of from about 5 to 35 percent by weight of a biodegradable surface active agent selected from the group consist-

ing of a linear alkyl aryl sulphonate, lauryl alcohol sulphate, a coconut oil fatty acid amine condensate wherein the fatty acid constituent has a molecular weight ranging from 144 to 284, an iso-octyl phenoxy polyethoxy ethanol having from 5 to 10 moles of ethoxy groups, a nonyl phenoxy polyethoxy ethanol having from 5 to 10 moles of ethoxy groups, polysaccharide-based surface active agents, and mixtures thereof; from about 5 to 60 percent by weight of a biodegradable alkaline water softening agent selected from the group consisting of trisodium nitrilo triacetate, sodium citrate, trisodium hydroxyethyliminodiacetate, tetrasodium ethylenediaminetetraacetate, and mixtures thereof; from about 5 to 15 percent by weight of a biodegradable anti-redeposition agent being sodium carboxymethyl cellulose having a degree of acyl substitution of from 0.7 to 2.5; and from about 5 to 35 percent by weight of an inorganic buffering alkali agent selected from the group consisting of sodium metasilicate, sodium orthosilicate, sodium sequisilicate, sodium carbonate, borax, and mixtures thereof; said composition being essentially free of phosphates.

3,846,326

BACTERIOSTAT SOAP, SHAMPOO AND SHAVE LOTION FORMULATIONS

Donald L. Wright, New York, N.Y., and John W. Frankenfeld, Highlands, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 23, 1971, Ser. No. 137,075
Int. Cl. C11d *9/50*
U.S. Cl. 252—107 **3 Claims**

1. A bacteriostat soap consisting essentially of a sodium salt of a fatty acid having 10 to 22 carbon atoms in the molecule and from about 0.05 percent to 5 percent by weight of an additive selected from the group consisting of normal alkyl 1,3-diols having 6 to 15 carbon atoms in the molecule and monesters of normal alkyl 1,3-diols having 4 to 15 carbon atoms in the molecule with normal alkyl monocarboxylic acids having from 2 to 18 carbon atoms in the molecule.

3,846,327

AZEOTROPIC COMPOSITION

John A. Schofield, Riverside, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 30, 1972, Ser. No. 257,681
Int. Cl. C11d *3/44*
U.S. Cl. 252—170 **4 Claims**

1. A constant boiling azeotropic composition consisting essentially of 1,1,2-trichloro-1,2,2-trifluoroethane and tertiary butanol and boiling at 46°C at about 760 mm. Hg.

3,846,328

METHOD FOR SEPARATING SULFIDE PHOSPHOR PARTICLES FROM MIXTURES

Bernard Beverly McCue, Christian Island, Ontario, Canada, assignor to RCA Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,174
Int. Cl. C09k *1/12*; **C0gk** *1/14*; **C09k** *1/44*
U.S. Cl. 252—301.6 S **7 Claims**

1. A method for separating oxidizable metal sulfide phosphor particles from a mixture with relatively nonoxidizable phosphor particles comprising

a. producing an aqueous slurry containing said mixture of phosphor particles
b. adding sufficient mineral acid to said slurry to provide a concentration of about 1 to 10 weight percent mineral acid in said slurry,
c. adding sufficient alkali nitrite to said slurry to provide a concentration of 1 to 5 weight-percent alkali nitrite in said slurry, said nitrite being capable of forming nitrous acid in said slurry,
d. permitting said acid and nitrite to react with said oxidizable phosphor particles whereby said oxidizable phosphor particles rise and float on the surface of said slurry,
e. and then removing said floated phosphor particles from said slurry.

3,846,329

ANTIFOAM COMPOSITION

Kermit W. Householder, Tonawanda, N.Y., and Van I. Doesburg, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 114,264, May 17, 1971, Pat. No. 3,785,935. This application Apr. 9, 1973, Ser. No. 349,606
Int. Cl. B01d *19/04*
U.S. Cl. 252—358 **4 Claims**

1. An antifoam composition which consists essentially of 1. 5 to 50 percent by weight of a silicone-glycol copolymer having the general formula $(CH_3)_3SiO[(CH_3)_2Si-O]_x[(CH_3)GSiO]_ySi(CH_3)_3$ wherein

x has an average value from 6 to 420,
y has an average value from 3 to 30, and
G is a radical of the structure $-D(OR)_zA$ wherein
D is an alkylene radical containing from 1 to 30 carbon atoms,
R is composed of ethylene radicals and radicals selected from the group consisting of propylene and butylene radicals, the amount of ethylene radicals relative to the other alkylene radicals being such that the ratio of carbon atoms to oxygen atoms in the total OR block ranges from 2.3:1 to 2.8:1,
z has an average value from 10 to 100, and
A is a capping group selected from the group consisting of hydroxy, acyl, ether and carbonate ester capping groups; 2. 5 to 50 percent by weight of polypropylene glycol having an average molecular weight in the range of 1000 to 2000, 3. 5 to 50 percent by weight of a glycol copolymer having the general formula $CH_2{=}CH{-}D'_m{-}(OC_2H_4)_a(OC_3H_6)_bR'$, wherein *a* and *b* each are integers greater than zero and each has an average value such that the copolymer has an average molecular weight in the range of 2000 to 3000, D' is an alkylene radical containing from 1 to 16 carbon atoms, *m* is zero or one, and R' is a capping group, selected from the group consisting of hydroxy, acyl, ether and carbonate ester capping groups; and 4. 40 to 85 percent by weight of water.

3,846,330

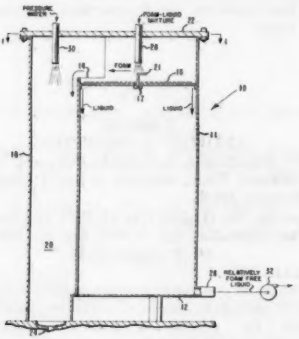
APPARATUS

Walter Luttrell Graf, Nashville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1973, Ser. No. 388,836
Int. Cl. B01d *19/00*
U.S. Cl. 252—361 **2 Claims**

1. An apparatus for separating and removing foam from a foam-liquid mixture flowing from a source, said apparatus comprising: a base; a peripherally continuous upstanding wall

attached to the base forming an open top tank, a portion of said wall being removed at the top of the tank forming a weir in said wall; a plate positioned in said tank normal to said wall, said plate having an area slightly smaller than the cross-sectional area of the tank and being located just below said weir to form a free annular space between plate & wall to permit liquid to flow into said tank; a second upstanding wall joined to and sealingly terminating at opposed locations on



said continuous wall to form a chamber adjacent said weir in said tank to trap overflow foam from said weir; a cover sealing the top of said tank and said chamber; a drain in communication with the bottom of said chamber for removal of overflow foam, said tank having an outlet near the bottom portion thereof for removal of foam free liquid; and an inlet pipe through said cover having one end positioned above said plate in said tank with the other end connected to said source of foam-liquid mixture.

3,846,331

SOLVENT COMPOSITION FOR DYES FOR USE IN PRESSURE-SENSITIVE COPYING PAPER

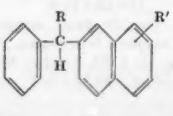
Akio Konishi; Masaaki Takahashi; Fumihiko Kimura, and Takehisa Toguchi, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1972, Ser. No. 277,864
Claims priority, application Japan, Aug. 4, 1971, 46-58363
Int. Cl. B01f *1/00*
U.S. Cl. 252—364 **7 Claims**

1. A dye solvent composition for use in pressure-sensitive copying paper comprising:

100 parts by weight of an aromatic hydrocarbon dye solvent selected from the group consisting of diaryl methanes, alkyl naphthalenes, triaryl dimethanes, alkyl diphenyls, and mixtures thereof, and;

10–100 parts by weight of one or more of a compound having the general formula:



wherein R and R′ represent hydrogen or a methyl group.

3,846,332

AZEOTROPES OF 1-CHLORO-2,2,2-TRIFLUOROETHYL DIFLUOROMETHYL ETHER WITH ACETONE, METHYL ETHYLKETONE AND TETRAHYDROFURAN

Louise S. Croix, Summit, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 168,399, Aug. 2, 1971, Pat. No. 3,720,587. This application Sept. 18, 1972, Ser. No. 289,914
Int. Cl. B01f *3/00;* **B01d** *3/36*
U.S. Cl. 252—364 **3 Claims**

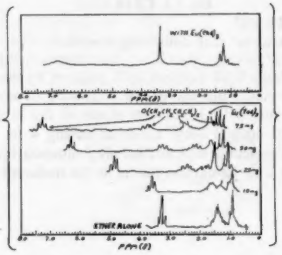
1. An azeotrope of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether and acetone having a boiling point of about 66°C. and containing about 1.2 moles of acetone per mole of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether.

3,846,333

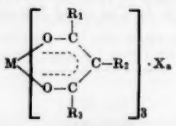
RARE EARTH COMPLEXES AS NUCLEAR MAGNETIC RESONANCE SHIFT REAGENTS

Robert E. Sievers, 2628 N. Emerald Dr., Fairborn, Ohio 45324

Division of Ser. No. 183,488, Sept. 24, 1971, Pat. No. 3,700,410. This application July 18, 1972, Ser. No. 273,003
Int. Cl. G01p *31/08*
U.S. Cl. 252—408 **3 Claims**



1. An adduct of an organic compound having a donor group and a lanthanide chelate of a fluorinated ligand having the following structural formula:

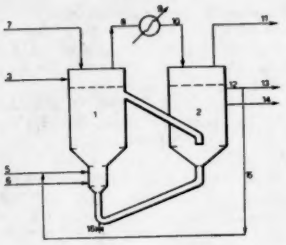


wherein M is a paramagnetic trivalent rare earth ion; R_1 and R_2 together are d-camphor and R_3 is fluoroalkyl containing 1 to 10, inclusive, carbon atoms; X is an organic compound containing a donor group or water; and *a* is a numeral from 0 to 4, inclusive, the mol ratio of chelate to organic compound being sufficient to cause a spectral shift when the adduct is subjected to spectral analysis by nuclear magnetic resonance.

3,846,334
REACTIVATION OF ALUMINUM TRICHLORIDE-HYDROCARBON CATALYTIC COMPLEXES USED IN THE ALKYLATION OF AROMATIC COMPOUNDS

Lucio Di Fiore, and Benedetto Calcagno, both of Milan, Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Sept. 5, 1972, Ser. No. 286,400
Claims priority, application Italy, Nov. 17, 1971, 31200/71
Int. Cl. B01j *11/02, 11/80;* **C07c** *3/56*
U.S. Cl. 252—414 **4 Claims**



1. A continuous process for the reactivation of catalytic complexes of aluminium trichloride and hydrocarbons which have become deactivated following their use in reactions for the alkylation of aromatic compounds with chloroalkylic alkylating agents, characterized in that:

in an activation zone, the deactivated aluminium trichloride-hydrocarbon catalytic complex, metallic aluminium in powder form and gaseous hydrogen chloride are brought into contact in a reaction medium constituted by benzene which is maintained in a boiling condition, and wherein said metallic aluminum in powder form is added in a quantity to form from 5 to 25% by weight of aluminum trichloride with respect to said deactivated complex; the reagent mixture is continuously transferred from the said activation zone to a separation zone maintained at a temperature not exceeding 80°C, in which an upper light stratum is formed which consists essentially of benzene, an intermediate stratum which consists essentially of the activated aluminium trichloride and hydrocarbon complex and a bottom heavier stratum consisting essentially of the catalytic complex which contains unaltered metallic aluminium in suspension;

the stratum of benzene is continuously discharged, the said benzene being recycled to the activation zone;

the stratum of activated aluminium trichloridehydrocarbon catalytic complex is continuously discharged from the said separation zone;

the heavy stratum containing the catalytic complex and the aluminium suspended therein is continuously recycled from the separation zone to the activation zone.

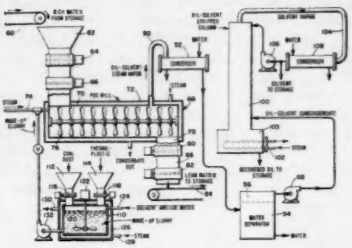
3,846,335
COMPOSITION FOR RECOVERING OIL FROM WATER

Clinton O. Bunn, Denver, Colo., assignor to Cal-Ment Corporation, Butte, Mont.

Division of Ser. No. 121,000, March 4, 1971, Pat. No. 3,783,129. This application June 6, 1973, Ser. No. 367,481
Int. Cl. B01d *39/14*
U.S. Cl. 252—428 **1 Claim**

1. A composition prepared by the method consisting of the following steps:

a. mixing finely divided coal −200 mesh or finer in size and powdered polyethylene in the presence of a liquid in sufficient amount to effect intimate mixing of said coal and polyethylene to form a matrix slurry or paste, said coal comprising at least 65 percent by weight of said mixture,



b. heating said matrix slurry to at least a temperature at which said polyethylene is in a softened state, and

c. cooling said polyethylene to ambient temperature to adhesively bind the finely divided coal in relatively spaced relation thereby to provide a porous, light weight matrix material which has a high affinity for oil, is combustible and is sufficiently light to float on water.

3,846,336
NOVEL CATALYST FOR CONVERSION OF OLEFINS TO UNSATURATED ALDEHYDES AND ACIDS

Leon B. Levy, Nueces, Tex., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 124,939, March 16, 1971, Pat. No. 3,703,551. This application Aug. 10, 1972, Ser. No. 279,585
Int. Cl. B01j *11/82*
U.S. Cl. 252—435 **4 Claims**

1. A catalyst composition consisting essentially of rhenium on an inert support, impregnated with tellurium dioxide and phosphomolybdic acid, containing about 0.1 to 3.0 percent by weight of rhenium and tellurium dioxide/phosphomolybdic acid in a ratio of 1:100 to 10:100 parts by weight.

3,846,337
PHOSPHATE-SILICA-ALUMINOSILICATE COMPOSITIONS OF IMPROVED CRUSHING STRENGTH AND METHODS OF PREPARING THE SAME

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed July 20, 1972, Ser. No. 273,418
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **7 Claims**

1. The method of forming structurally stable silica bonded aggregates of particulate silicates comprising the steps of

intimately mixing said silicate with a colloidal hydrous silica sol in the presence of water at a temperature of at least about 40°F and for a period of at least about 10 minutes sufficient to react said silica sol with said silicate, reacting with the resultant combination about 1 to about 30 weight percent determined as P_2O_5 of at least one polyphosphate or polyphosphate precursor convertible to a polyphosphate at temperatures above about 180°F and selected from the group consisting of phosphoric acids, ammonium salts of phosphoric acids, and hydrogen and ammonium phosphates of polyvalent metal cations having ionic radii less than about 1 angstrom, forming aggregates of said silicate particles, and heating the resultant aggregates at a temperature of at least 180°F for at least about 30 minutes wherein said silicate constitutes at least about 2 weight percent of said aggregate on a dry weight basis and is selected from the group consisting of silica gels, physical mixtures and cogels of silica and another refractory oxide, an crystalline aluminosilicate zeolites comprising at least about 50 weight percent silica on a dry weight basis, and said silica sol constitutes about 5 weight percent of said aggregate on a dry weight basis and has a average particle diameter below about 1 micron.

3,846,338

METHOD FOR PRODUCING PHOSPHATE CATALYST

Revekka Vulfovna Kachlova, ulitsa Krylenko, 5, kv. 194; Mark Semenovich Nemtsov, ulitsa Gagarina, 21, kv. 8; Galina Fedorovna Balkhanova, ulitsa Telmana, 48, korpus 3, kv. 60; Ljudmila Nikolaevna Bychkovskaya, 11 Krasnoarmeiskaya ulitsa, 6, kv. 10; Vera Mikhailovna Mescherskaya, kanal Griboedova, 111, kv. 1, and Sofya Petrovna Rabinovich, Bolshoi prospekt, 12, kv. 9, all of Leningrad, U.S.S.R.

Filed July 21, 1972, Ser. No. 273,958

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **6 Claims**

1. A method for producing an improved Group II metal phosphate catalyst for rupturing of

bonds in organic compounds, in particular, for splitting 4,4-dimethyl -1,3-dioxane into isoprene, and for dehydration of alcohols, which consists essentially of subjecting an initial Group II metal phosphate to thermal passivation at a temperature in the range of from 550° to 700°C., said temperature being achieved by passing through said phosphate a gaseous heat carrier selected from the group consisting of superheated steam and mixtures thereof with air or with an inert gas.

3,846,339

CATALYST FOR THE SPONTANEOUS DECOMPOSITION OF MONOPROPELLANT HYDRAZINE

Jack L. Blumenthal, Los Angeles, and Eugene D. Guth, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 698,846, Jan. 18, 1968, Pat. No. 3,732,694. This application Apr. 13, 1970, Ser. No. 32,486

Int. Cl. B01j *11/08, 11/22*

U.S. Cl. 252—438 **3 Claims**

1. A composition for the spontaneous decomposition of hydrazine propellant fuels consisting essentially of a low temperature oxidizer-starter selected from the group consisting of iodine pentoxide, ammonium dichromate, silver nitrate, chromic trioxide, potassium per-manganate, and sodium cobaltinitrite and rhenium coated on a high surface area support.

3,846,340

CATALYTIC COMPOSITION FOR TREATMENT OF EXHAUST GASES AND A METHOD OF PRODUCTION THEREOF

Toshiki Okuyama; Hiroko Iwabuchi, both of Fujisawa City; Mitsuyoshi Sano, Miura City; Shinichi Manabe, Yokosuka; Junichi Mine, and Mikiko Sato, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 20, 1972, Ser. No. 299,332

Claims priority, application Japan, Oct. 25, 1971, 46-83897

Int. Cl. B01j *11/22*

U.S. Cl. 252—455 R **21 Claims**

1. A catalytic composition for treating exhaust gases containing hydrocarbons, carbon monoxide and oxides of nitrogen, consisting of a carrier and nickel oxide and chromium oxide in a total metal component amount of 0.2 to 3.1 moles and zirconium oxide of which metal component is in a molar ratio of 1/50 to 1/5 of the total metal component amount of said nickel oxide and chromium oxide per 1 liter of said carrier.

3,846,341

PROCESS FOR MANUFACTURING IRON MOLYBDATE CATALYSTS OF HIGH STRENGTH AND THE USE OF THE RESULTING CATALYSTS IN THE CATALYTIC OXIDATION OF ALCOHOLS TO ALDEHYDES

Philippe Courty, Nanterre, (Hauts de Seine), France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Filed Mar. 8, 1971, Ser. No. 122,075

Claims priority, application France, Mar. 16, 1970, 70.09373

Int. Cl. B01j *11/22, 11/34, 11/36*

U.S. Cl. 252—462 **20 Claims**

1. In a process for manufacturing a catalyst containing catalytic quantities of iron and molybdenum from a catalyst precursor, said iron and molybdenum being the predominant catalytic metallic elements in said catalyst and in said precursor, the improvement comprising:

a. employing, as the said catalyst precursor, a homogeneous substance containing molybdate and ferric ions in an atomic ratio Mo/Fe of 1.5–5, water in an amount lower than 10% by weight, and ions of an ammonium salt in an amount expressed as the weight of said ammonium salt, of 10–50% of the dry weight of said homogeneous substance; and

b. heating said homogeneous substance at 150–250°C for a time sufficient to eliminate substantially all the water and a portion of the ammonium salt contained therein, thereafter mixing the product resulting from said heating with water or a chemically inert solvent capable of dissolving not more than said ammonium salt, shaping said mixture, and heating resultant shaped mixture to 150–250°C to dry same and to result in an unactivated catalyst of improved mechanical strength, said unactivated catalyst being thereafter calcinable by heating at 300–500°C to result in an activated catalyst of improved mechanical strength.

3,846,342

CATALYST CONTAINING AN OXIDE OF TECHNETIUM AS A PROMOTER

Albert L. Hensley, Jr., Munster, and Thomas D. Nevitt, Valparaiso, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 127,808, March 24, 1971, abandoned. This application Aug. 31, 1972, Ser. No. 285,302
Int. Cl. B01j *11/08*
U.S. Cl. 252—465 6 Claims

1. A catalytic composition for the reforming of a petroleum hydrocarbon stream, which catalytic composition comprises as a component having hydrogenation-dehydrogenation activity and dehydrocyclization activity an oxide of chromium, a suitable support comprising catalytically active alumina, and as a promoter a small amount of an oxide of technetium.

3,846,343

PROCESS FOR PREPARING A PLATINUM-RHENIUM CATALYST ON AN ALUMINA SUPPORT

Henry Erickson, 400 E. Sibley Blvd., Harvey, Ill. 60426; Saul G. Hindin, 497 Delancy St., Newark, N.J. 07105; Carl D. Keith, 497 Delancy St., Newark, N.J. 07105, and John Mooi, 400 E. Sibley Blvd., Harvey, Ill. 60426

Continuation of Ser. No. 21,546, March 20, 1970, abandoned. This application May 2, 1972, Ser. No. 249,739
Claims priority, application Canada, Feb. 13, 1970, 74803
Int. Cl. B01j *11/08*
U.S. Cl. 252—466 PT 9 Claims

1. A process for preparing an alumina-supported, rhenium and platinum series metal-containing, calcined catalyst which comprises the following steps:

i. drying an aqueous slurry of hydrated alumina to obtain a mixture which can be formed into macrosize particles;
ii. forming the mixture into macrosize particles;
iii. calcining the particles at a temperature from about 800 to 1800°F. so as to provide the particles with a surface area of below about 350 square meters per gram, with the proviso that said calcining is conducted at at least about 1200°F. when it is conducted in the substantial absence of water vapor;
iv. impregnating the calcined particles with aqueous solution of water-soluble platinum series metal acid or salt and aqueous solution of water-soluble rhenium acid or salt in an amount sufficient to provide about 0.1 to 1 weight percent of said platinum series metal and about 0.1 to 2 weight percent of said rhenium, calculated as the free metals, in the final catalyst; and
v. recalcining the impregnated particles at a temperature from about 600 to about 1200°F.

3,846,344

METHOD FOR PRODUCING NICKEL CATALYST

Floyd Gotthard Larson, Jr., Ringwood, and Edwin Snape, Ramsey, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 24, 1972, Ser. No. 274,412
Int. Cl. B01j *11/22*
U.S. Cl. 252—466 J 2 Claims

1. A process for forming a catalyst structure having a first surface adapted to contact a reacting mass and having a second surface in direct metallic heat conductive relationship to said first surface adapted to contact a heat absorbing medium comprising electrodepositing nickel to firmly adhere on a first surface of a stainless steel article to a thickness of at least about 0.075 millimeter, depositing about 0.5 to about 30 grams of aluminum per square decimeter on said nickel coated first surface, interdiffusing said aluminum and said nickel to provide a diffusion layer at least 0.05 millimeter thick and to retain essentially pure aluminum on the surface and, thereafter, treating said article with a selective solvent for said aluminum to provide a catalytic layer of nickel on said first surface of said article and a corrosion resistant stainless steel surface on said second surface of said article.

3,846,345

ELECTROCONDUCTIVE PASTE COMPOSITION AND STRUCTURES FORMED THEREFROM

Daniel W. Mason, Peabody, Mass., and Henry H. Nester, deceased, late of Peabody, Ill. (Dianne L. Nester, administratrix), assignors to Owens Illinois, Inc., Toledo, Ohio

Division of Ser. No. 13,918, Oct. 6, 1969, Pat. No. 3,718,608. This application July 31, 1972, Ser. No. 276,743
Int. Cl. H01b *1/02*
U.S. Cl. 252—514 8 Claims

1. An electroconductive body of material having a plurality of particulate bodies of less than about ten microns in diameter embedded within a fused glassy matrix of dielectric material in mutual interfacial contacting relationship and providing a continuous electroconductive path through said fused glassy matrix of dielectric material, said particulate bodies including a plurality of particulate bodies respectively having a core of dielectric material selected from at least one of the group consisting essentially of glass, alumina, beryllia, and ceramic material and surrounded by an essentially continuous skin of electroconductive noble metal material selected from at least one of the group consisting of palladium, rhodium, and oxides and alloys of either thereof.

3,846,346

DETERGENT COMPOSITION WITH CONTROLLED ALKALINITY

William K. Conn, Springfield, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

Continuation of Ser. No. 109,654, Jan. 25, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,731
Int. Cl. C11d *3/066*
U.S. Cl. 252—527 10 Claims

1. A detergent composition for use in laundering, consisting essentially of 5 to 40 percent surfactant, 10 to 50 percent sequestering agent, 0 to 5 percent anti-redeposition agent, 0 to 2 percent optical brightener, wherein said sequestering agent is selected from the group consisting of sodium nitrolotriacetate and sodium tripolyphosphate and said surfactant is selected from a group consisting of nonionic and anionic surfactants, and including the improvement consisting of using at least 5 percent and up to 40 percent alkali metal

silicate and 5 to 40 percent of a relatively acidic pH controller selected from a group consisting of fused borax, ethelenediaminetetraacetic acid, nitrilotriacetic acids and diethylenetriaminepentaacetic acid and whereby a normal wash solution of said composition has a pH of 9.5 to 10.5.

ERRATUM

For Class 260—000 see:
Patent No. 3,846,342

3,846,347

RIGID FOAMS FROM POLYURETHANE AND METHODS AND COMPOSITIONS FOR USE IN THEIR PREPARATION

Kenneth P. Satterly, Kennett Square, Pa., assignor to Witco Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 683,152, Nov. 15, 1967, abandoned, which is a continuation of Ser. No. 250,505, Jan. 10, 1963, abandoned, which is a continuation-in-part of Ser. No. 783,688, Dec. 30, 1958, abandoned. This application Sept. 21, 1970, Ser. No. 74,216

Int. Cl. C08g *22/48*

U.S. Cl. 260—2.5 AF **25 Claims**

1. A stable, highly branched prepolymer which is a polyurethane and is in liquid form, being dissolved in a solvent comprising a reactive organic polyisocyanate, said prepolymer being capable of being placed into the form of a rigid foam which has a K factor value of less than 0.22 and which foam has a closed cell content of about 90 percent, the cells being fine, uniform cells, said prepolymer comprising the reaction product of an excess of polyisocyanate and a polymeric hydroxy compound which compound is a polyalkylene oxide being the addition product of an alkylene oxide having at least three carbon atoms with a hydroxy compound having at least six hydroxyl groups, and said prepolymer containing reactive organic polyisocyanate contributing to the presence of unchanged isocyanato groups reactive to further polymerization, the said reactive polyisocyanate acting as said solvent.

3,846,348

HIGH IMPACT, FIRE RETARDANT, RIGID POLYURETHANE FOAM COMPOSITIONS HAVING HIGH RESISTANCE TO BOILING WATER AND PRODUCTS THEREFROM

Raymond W. Horst, Cincinnati, and Victor G. Soukup, Wyoming, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 876,601, Nov. 13, 1969, abandoned. This application July 24, 1972, Ser. No. 274,616

Int. Cl. C08g *22/48, 51/58*

U.S. Cl. 260—2.5 AJ **15 Claims**

1. An impact resistant, boiling water resistant, cured rigid polyurethane foam molding which is fire retardant, resulting from the reaction of (1) an isocyanate terminated product obtained by the reaction of a stoichiometric excess of an aromatic polyisocyanate with a poly (oxyalkylene) diol, copoly (oxyalkylene) diol, or mixture of poly (oxyalkylene) diols with (2) a polyether polyol having at least 4 hydroxyl groups per molecule which is the product of the reaction of one or more alkylene oxides with an aromatic, araliphatic, cycloalkyl or heterocyclic polyhydroxy compound or a mixture of polyether polyols containing at least one polyether polyol which is the reaction product obtained by reacting one or more alkylene oxides with an aromatic, araliphatic, cycloalkyl or heterocyclic polyhydroxy compound containing at least 4 hydroxyl groups per molecule, in the presence of (3) tris (1-bromo-3-chloroisopropyl) phosphate; (4) one or more blowing agents; and optionally (5) one or more catalysts; and (6) one or more surfactants.

3,846,349

POLYPROPYLENE COMPOSITION AND FOAMED POLYPROPYLENE SHEET THEREFROM

Taro Harada, Suita; Nobuo Ito, Ibaragi, and Kanemitsu Ohishi, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 26, 1973, Ser. No. 373,639

Int. Cl. C08f *47/10*

U.S. Cl. 260—2.5 HA **4 Claims**

1. A foamed polypropylene sheet having excellent impact resistance and a good texture and being soft, which is obtained by adding a blowing agent to a polypropylene composition consisting essentially of from 30 to 80 parts by weight of a crystalline polypropylene, from 10 to 40 parts by weight of a non-crystalline polypropylene and from 10 to 40 parts by weight of a low density polyethylene and then extruding the resulting mixture to foam.

3,846,350

PROCESS FOR THE VULCANIZATION AND EXPANSION OF POLYCHLOROPRENE RUBBER WITH AZODICARBNAMIDE

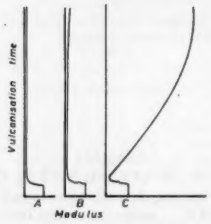
Jochen Schentger, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 213,545, Dec. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 192,936, Oct. 27, 1971, abandoned. This application July 2, 1973, Ser. No. 375,546

Claims priority, application Germany, Oct. 29, 1970, 2053081; Dec. 10, 1971, 2161342

Int. Cl. C08d *13/10*

U.S. Cl. 260—2.5 H **5 Claims**



1. A process for the production of a cellular polychloroprene vulcanizate comprising heating a mixture of polychloroprene, at least one metal oxide and azodicarbonamide whereby said mixture is vulcanized and expanded.

3,846,351

SECONDARY AROMATIC ALKYL DIAMINES AS FOAM CATALYSTS AND CHAIN EXTENDERS

James E. Huffaker; Ambrose J. Clonce, and John E. Besser, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 275,123, July 26, 1972, abandoned. This application Aug. 21, 1973, Ser. No. 390,292

Int. Cl. C08g *22/46, 22/36*

U.S. Cl. 260—2.5 AM **1 Claim**

1. In the method of producing flexible polyurethane foam by reacting a polyether polyol with a diisocyanate and foaming said polyurethane by the use of a blowing agent, the improvement which comprises incorporating with said reactants as the only catalyst and chain extending agent between about 0.5 and about 5 parts by weight per hundred parts polyol of a compound selected from the group consisting of N,N′-dialkyl-p-phenylenediamine and N,N′-dialkyl-m-phenylenediamine wherein said alkyl groups contain between 3 and 10 carbon atoms.

3,846,352

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS COMPRISING RUBBER AND A RESINOUS INTERPOLYMER

Herbert L. Bullard, Norton Village; David R. St. Cyr, Uniontown, and Robert A. Osborn, Stow, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 219,497, Jan. 20, 1972, Pat. No. 3,784,530. This application Sept. 4, 1973, Ser. No. 394,006

Int. Cl. C08f *15/40;* **C08d** *9/08*

U.S. Cl. 260—5 **2 Claims**

1. A composition which comprises a resinous material having a softening point in the range of about 60°C. to about 110°C. consisting essentially of piperylene, 2-methyl-2-butene, dicyclopentadiene and α-methyl styrene in an admixture with a polymeric material selected from natural rubber and synthetic rubber having a Mooney viscosity (ML–4) at about 100°C. of about 45 to about 65 where said resinous material comprises from about 30 to about 55 weight percent units derived from piperylene, from about 20 to about 45 weight percent units derived from 2-methyl-2-butene, from about 15 to about 30 weight percent units derived from dicyclopentadiene and from about 20 to about 35 weight percent units derived from α-methyl styrene prepared by the method which comprises polymerizing at a temperature in the range of about −20°C. to 50°C. in the presence of an anhydrous catalyst selected from aluminum chloride and ethyl aluminum dichloride and a solvent selected from aliphatic and aromatic hydrocarbons a mixture which comprises from about 15 to about 50 weight percent piperylene, from about 15 to about 50 weight percent 2-methyl-2-butene, from about 5 to about 40 weight percent dicyclopentadiene and from about 5 to about 40 weight percent α-methyl styrene, where the mole ratio of piperylene to 2-methyl-2-butene is in the range of about 0.8:1 to about 1.8:1.

3,846,353

NONTHROMBOGENIC PLASTIC MATERIAL AND METHOD FOR MAKING THE SAME

Henry M. Grotta, Delaware, Ohio, assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed June 8, 1970, Ser. No. 44,594

Int. Cl. A61k *17/18;* **B44d** *5/12;* **C08b** *25/00*

U.S. Cl. 260—9 **15 Claims**

1. A method of making a nonthrombogenic plastic material comprising the steps of exposing a polymeric plastic to an organic solvent solution of water-insoluble, organic solvent-soluble, plastic-compatible long chain alkyl quaternary ammonium salt at ambient temperature, said long-chain alkyl quaternary ammonium salt having from 2 to 4 alkyl groups each having from about 10 to about 30 carbon atoms, and thereafter exposing said polymer to a solution of heparin at ambient temperature.

3,846,354

COMPOSITION COMPRISING ETHYLENE/VINYL CHLORIDE/N-METHYLOL ACRYLAMIDE TERPOLYMER, STARCH AND A MINERAL PIGMENT FOR COATING PAPER

William F. Fallwell, Jr., Saint Louis, Mo., assignor to Monsanto Company, Saint Louis, Mo.

Division of Ser. No. 56,685, July 20, 1970, Pat. No. 3,755,233. This application Apr. 25, 1973, Ser. No. 354,300

Int. Cl. C08d *9/06;* **C08f** *37/16*

U.S. Cl. 260—17.4 ST **7 Claims**

1. An aqueous composition comprising a mineral pigment and as a binder (a) from about 1 to about 100 parts by weight per 100 parts by weight of pigment, of an ethylene/vinyl chloride/N-methylolacrylamide terpolymer containing from about 15 to about 70 weight percent ethylene, from about 30 to about 85 weight percent vinyl chloride and from about 0.1 to about 10 weight percent N-methylolacrylamide, and (b) starch in a ratio of starch solids to terpolymer solids of from about 95:5 to about 5:95; wherein said aqueous composition contains from about 20 to about 400 parts by weight of dispersed solids for each 100 parts by weight of water.

3,846,355

POLYURETHANE COMPOSITIONS EXTENDED WITH LOW AROMATIC HYDROCARBON OILS

Simon Ernest Mayer, 7 Russell Rd., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 113,033, Feb. 5, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 298,149

Int. Cl. C08g *22/04*

U.S. Cl. 260—18 TN **8 Claims**

1. In a polyurethane resin composition extended with at least 20 percent by weight of a low aromatic hydrocarbon oil having a Kauri-Butanol value of between about 25 and about 40, said polyurethane resin being a reaction product of an organic polyisocyanate and a polyol having a carbon chain of at least 10 carbon atoms:

the inprovement comprising including in said composition at least about 1 percent by weight of an emulsifying agent which is an alkylene oxide adduct derived from a long chain fatty acid having from 12 to 20 carbon atoms, and at least about 0.5 percent by weight of a colloidal thixotropic agent which is a metallo-organic complex and which produces micelles of stable, uniform inorganic nuclei having a diameter of less than 0.1 micron in said low aromatic hydrocarbon oil.

3,846,356

TRIALKYLSILYL-TREATED FUMED SILICON DIOXIDE PIGMENTS FOR ELECTRO-DEPOSITION

Kenneth C. Hou, Somerset, and Norman W. Thomas, Warren, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed June 8, 1973, Ser. No. 368,153

Int. Cl. C08g *51/04*

U.S. Cl. 260—18 EP **6 Claims**

1. An aqueous electro-depositable composition comprising an ionically solubilized synthetic organic resin vehicle having

dispersed therein in pigmentary form up to about 15 percent by weight, based upon the vehicle, of a trialkylsilyl-treated fumed silicon dioxide pigment having a surface area in the range of 50 to 350 m^2/g wherein the total pigment to binder ratio is not higher than about 3 to 1.

3,846,357

PROCESS FOR THE POLYMERIZATION OF LACTAMES ALLOWING SUBSTANCES AFFECTED BY HIGH TEMPERATURES TO BE ADDED DURING POLYMERIZATION

Genevieve Morival, Serquigny, France, assignor to Societe Anonyme dite: Aquitaine Total Organico Tour Aquitaine, Courbevoie, France

Continuation of Ser. No. 191,474, Oct. 21, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,840

Int. Cl. C08g *51/02, 51/22*

U.S. Cl. 260—18 N **23 Claims**

1. A process for the polymerization of polyamides which consists essentially of polymerizing in the presence of water, a lactam having at least 6 carbon atoms in the ring and in the presence of an acidic catalyst or organic base catalyst, at a temperature between 270°C and 335°C, cooling the reaction mixture to a temperature between 260°C and 130°C, adding to said cooled reaction mixture a member selected from the group consisting of stabilizers, plasticizers, pigments, coloring agents, metal powders, molding agents, lubricating agents and anti-oxidizing agents, and completing the polymerization reaction at a temperature of 260°C to 130°C.

3,846,358

PROCESS FOR PRODUCING SILICONE RESINS

George F. Roedel, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,072

Int. Cl. C08k *1/66*

U.S. Cl. 260—18 S **11 Claims**

1. A process for producing a silicone resin comprising (a) contacting an organohalosilane selected from the class consisting of organotrihalosilanes and diorganodihalosilanes and mixtures thereof, where the organo group is selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, with from 0.05 to 1 part of water based on per part of organohalosilane with from 0.1 to 1 part of an alcohol based on per part of said organohalosilane of the formula,

R'O H

where R' is an alkyl radical of one to eight carbon atoms such that there is formed an alkoxylated organosiloxane containing 5 to 40 percent by weight of alkoxy groups; (b) adding from 0.04 to 1.0 parts of an alcohol based on per part of the alkoxylated organohalosiloxanes of the formula,

R'O H

where R' is as previously defined and removing acid from alkoxylated organohalosiloxane to an acid concentration of 500 to 4000 ppm; (c) adjusting the acidity of the alkoxylated organohalosiloxane to 1 to 300 ppm; (d) adding from 0.04 to 1 part of water per part of said alkoxylated organohalosiloxanes to hydrolyze the alkoxylated organosiloxane; and (e) adjusting the resulting hydrolyzate to the desired solids content.

3,846,359

STORAGE STABLE BINDERS

Paul Rostaing, Vienne, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Mar. 27, 1973, Ser. No. 345,331

Claims priority, application France, Mar. 28, 1972, 72.10820; Dec. 5, 1972, 72.43189

Int. Cl. C08g *17/16*

U.S. Cl. 260—22 S **9 Claims**

1. A binder composition comprising, in parts by weight,

60 to 120 parts of component A, which is at least one alkyl silicate or alkyl polysilicate, the alkyl radical of which contains one to three carbon atoms,

3 to 25 parts of component B, which is at least one alkyl titanate or allkyl polytitanate, the alkyl radical of which contains three to eight carbon atoms,

10 to 20,000 parts of component C, which is at least one film forming resin selected from the group consisting of (*a*) film form organic resins containing at least the elements carbon, hydrogen and oxygen but not silicon, (b) film forming organic resins containing at least the elements carbon hydrogen, oxygen and silicon and (c) co condensation products of organic resins (a) with organic resins (b), and

20 to 1,500 parts of component D, which is an organic solvent.

3,846,360

BASE FOR UNIVERSAL PIGMENT CONCENTRATES

Donald G. Needham, Ramona, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 13, 1971, Ser. No. 207,516

Int. Cl. C08c *11/18;* **C08d** *9/08*

U.S. Cl. 260—23.7 R **5 Claims**

1. A universal pigment concentrate for coloring a polymeric material selected from the group consisting of polyolefins, ethylene-vinyl acetate copolymers, acrylonitrile-butadiene-styrene terpolymers, polystyrene, polyamides and polyesters consisting essentially of:

distinct particles homogeneously dispersed in a carrier material, said carrier material consisting essentially of from about 10 to about 60 weight percent, based on weight of carrier material, of at least one first polymeric material selected from the grooup consisting of copolymers of at least one conjugated diene having from 4 to 12 carbon atoms and at least one monovinyl aromatic hydrocarbon having from 8 to 18 carbon atoms; said copolymer having been obtained by the polymerization of one or more of such monomers in the presence of an inert solvent for such copolymer and a polymerization initiator selected from the group consisting of an Alfin catalyst, an alkali metal and an organolithium compound;

from about 20 to about 75 weight percent, based on weight of carrier material of at least one extender oil; and,

from about 15 to about 70 weight percent of polyethylene as a binder material

wherein the amount of said pigment particles is in the range of about 20 to about 90 weight percent, based on weight of pigment and carrier material, and the amount of said carrier material is in the range of about 80 to 10 weight percent, based on weight of pigment and carrier material.

3,846,361

PHONOGRAPH RECORD COMPOSITION AND PROCESS

A. John Sands, P.O. Box 167, Bayside, N.Y. 11361

Filed June 14, 1972, Ser. No. 262,644

Int. Cl. C08f *45/52, 45/28;* **C09k** *3/00*

U.S. Cl. 260—28.5 D **17 Claims**

1. A phonograph record composition comprising a thermoplastic resin selected from the group consisting of polyvinyl

chloride and a combination of polyvinyl chloride and a copolymer of vinyl chloride and vinyl acetate, toluene in an amount of about 2 to 5 parts for each 100 parts of thermoplastic resin, a heat stabilizer for the thermoplastic resin and a colorant for the phonograph record composition.

3,846,362

MOLDING COMPOSITIONS BASED ON ETHYLENE-VINYL ACETATE COPOLYMERS AND PITCH

Herbert Reinecke; Klaus Adler; Johann Bauer, all of Burghausen; Reinhard Kretschmer, Munich; Gerhard Lamhofer, Olching, and Engelbert Pichler, Burghausen, all of Germany, assignors to Wacker-Chemie, GmbH, Munich, Germany

Filed Sept. 7, 1972, Ser. No. 286,963

Claims priority, application Germany, Sept. 27, 1971, 2148186

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 AS **6 Claims**

1. A molding composition for the preparation of foils based on ethylene-vinyl acetate copolymers and pitch consisting essentially of (A) from 40 to 60 percent by weight of a coal tar pitch having a softening point (DIN 1995) of from 100°C to 195°C, (B) from 30 to 60 percent by weight of an ethylene-vinyl acetate copolymer having a vinyl acetate content of from 50 to 70 percent by weight of the copolymer, (C) from 10 to 30 percent by weight of a thermoplastically shapable polymer having a freezing temperature of below −30°C, (D) from 0 to 10 percent by weight of additives selected from the group consisting of pigments, fillers, stabilizers and processing aids.

3,846,363

ADHESIVE CRAYON COMPOSITION CONTAINING SORBITOL-BENZALDEHYDE REACTION PRODUCT AS ADDITIVE

Takuo Ando, Ibaraki, and Hiroyuki Yamazaki, Toyonaka, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

Filed Jan. 28, 1972, Ser. No. 221,767

Claims priority, application Japan, Feb. 3, 1971, 46-4104; May 31, 1971, 46-38019; June 2, 1971, 46-38896

Int. Cl. C09j *3/12*; C08f *3/56*; C09j *3/00, 3/14*

U.S. Cl. 260—29.6 BM **6 Claims**

1. In an adhesive crayon comprising
   1. an adhesive resin selected from the group consisting of partially or completely hydrolyzed polyvinyl acetate, hydrolyzed vinyl acetate-crotonic acid copolymer, hydrolyzed vinyl acetate-maleic anhydride copolymer, vinyl methyl ether-maleic anhydride copolymer, vinyl acetate-ethylene copolymer, hydrolyzed vinyl acetate-ethylene copolymer and polyvinyl pyrrolidone,
   2. water, and
   3. a water-miscible organic solvent, the improvement which comprises incorporating therein a reaction product prepared by reacting 1 mole of sorbitol and 1 to 3 moles of benzaldehyde with or without 0.1 to 2 moles of a boron compound; water, said water-miscible organic solvent and said reaction product being employed in the ratio of 5 to 40, 10 to 60 and 0.2 to 20 parts by weight, respectively, to 10 parts by weight of said adhesive resin.

3,846,364

RESILIENT OIL EXTENDED POLYURETHANE SURFACES

Dean W. Criddle, Pleasant Hill, and Arthur L. Meader, Jr., Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 130,769, April 2, 1971, abandoned. This application Aug. 2, 1972, Ser. No. 277,459

Int. Cl. C08g *51/28*

U.S. Cl. 260—33.6 UB **9 Claims**

1. A resilient surfacing of from about ⅛ to 3 inches in thickness, comprising (1) 1 part by weight of a polyurethane prepared in situ from a polyisocyanate and a polyol mixture, wherein said polyol mixture is from 50–95 weight percent of a polypropylene glycol having a molecular weight of from 1,500 to about 3,000 and from 50–5 weight percent of a short-chain polyol having 2 to 3 hydroxyl groups and a molecular weight in the range of from 62–300, the mol ratio of said short-chain polyol to said polypropylene glycol being from 0.5–5.0:1.0, and wherein said polyisocyanate is used in an equivalent ratio of from about 1.3 to about 2.3 equivalents per equivalent of hydroxyl from said polyol mixture, (2) from 0.05 part to about 0.3 part by weight extender oil having a viscosity of from 100 to 10,000 SUS at 100°F., and an aniline point of from 80 to 140, (3) from about 2 to about 5 parts by weight natural or synthetic rubber particles having a maximum dimension of about 1 inch, not more than ten percent of which will pass through a No. 30 U.S. standard sieve, (4) from zero to about 0.08 part by weight drying agent, and (5) from zero to about 0.08 part by weight carbon black having a mean particle diameter of from about 10 to about 70 millimicrons.

3,846,365

PROCESS FOR THE PRODUCTION OF POURABLE ELASTOMER PARTICLES

Gerhard Berg; Karl-Heinz Nordsiek; Gunter Maahs, and Wilhelm Schanzer, all of Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Filed July 10, 1972, Ser. No. 270,003

Claims priority, application Germany, July 15, 1971, 2135266

Int. Cl. C08c *11/10, 11/18, 11/22*

U.S. Cl. 260—33.6 AQ **27 Claims**

1. A process for preparing discrete, finely divided, tack-free, pourable, powdery filler-containing elastomer particles from an admixture of (a) an aqueous emulsion of 1–50 percent by weight of an elastomer selected from the group consisting of polybutadienes having a 1,2-content of 15–75 percent, polyalkenamers, solution polymerized styrenebutadiene copolymers, ethylene-propylene copolymers and ethylene-propylene-diene copolymers, said aqueous emulsion consisting essentially of (i) a solution of said elastomer dissolved in a volatile, inert organic solvent having a boiling point below 100°C, (ii) an elastomer emulsifying amount of a quaternary ammonium salt cationic surfactant, and (iii) water, the volume ratio of the aqueous phase to the organic solvent phase of said emulsion being from about 0.25:1 to about 2.5:1 respectively, and (b) an aqueous suspension or dispersion of a solid, finely divided elastomer filler, the volume ratio of aqueous filler to said aqueous emulsion in said admixture being from about 0.2:1 to about 2.0:1, which process comprises:

gradually introducing said admixture into a 0.1 to 5 fold volume of an aqueous alkali silicate solution containing 2–20 moles of SiO_2 per mole of said quaternary ammonium salt while maintaining said silicate solution at a pH greater than 2 to avoid a condensation reaction of the silicate anions, and

simultaneously evaporating said volatile organic solvent to form said filler-containing elastomer particles.

3,846,366

STRUCTURAL MATERIAL AND METHOD

Richard A. Wallace, 43 Kingscote Garden, Stanford, Calif. 94305

Filed Nov. 22, 1971, Ser. No. 201,111
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **23 Claims**

1. A composition comprising an intimate mixture of 60 to 90 parts by weight of a particulate reinforcement filler and 10 to 40 parts by weight of a resinous adhesive polymer binder bonding said filler particles together, said filler comprising a pyrolysis or incinceration residue of industrial or municipal solid waste products, said pyrolysis or incineration residue comprising at least 48 percent of silica and alumina and including a sufficient content of a plurality of different metal and metal oxide particles to significantly increase the strength of said composition in comparison to the same composition absent said metal and metal oxide particles, the majority of said filler particles having a gradation varying from −4 to 300 mesh size, said filler being characterized by non-homogeneous mesh size and individual filler particles with irregular rough shapes.

3,846,367

MINERAL REINFORCED NYLON COMPOSITION WITH HIGH IMPACT STRENGTH

Louis Lasseter Burton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1973, Ser. No. 363,663
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 N **10 Claims**

1. A polyamide composition comprising (1) a blend of polycaprolactam and polyhexamethylene adipamide, said blend containing between 8 and 20 percent by weight polycaprolactam based on the weight of the total polyamide present, said blend comprising 55 to 75 percent by weight of the composition; (2) 25 to 45 percent by weight of the composition of a mineral reinforcing agent and (3) a silane coupling agent in the amount of 0.25 to 2 percent by weight of the mineral reinforcing agent.

3,846,368

THERMOSETTING ACRYLIC POWDER COATING COMPOSITION OF A POLYBLEND OF ACRYLIC POLYMER HAVING A HIGH GLASS TRANSITION TEMPERATURE AND AN ACRYLIC POLYMER HAVING A LOW GLASS TRANSITION TEMPERATURE AND A CROSS-LINKING AGENT

Paul H. Pettit, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 19, 1973, Ser. No. 352,738
Int. Cl. C08g *37/32, 45/10, 51/14*
U.S. Cl. 260—39 R **10 Claims**

1. A thermosetting acrylic polymer powder coating composition comprising finely divided particles having a particle size of 1–100 microns; wherein the powder particles are an intimately mixed blend of film-forming constituents consisting essentially of

A. 40–75 percent by weight of a hard acrylic polymer consisting essentially of
   1. 80–95 percent by weight, based on the weight of the hard acrylic polymer, of methyl methacrylate,
   2. 3–10 percent by weight, based on the weight of the hard acrylic polymer, of an alkyl methacrylate or an alkyl acrylate having 2–14 carbon atoms in the alkyl groups,
   3. 2–17 percent by weight, based on the weight of the hard acrylic polymer, of a hydroxyalkyl acrylate or hydroxyalkyl methacrylate having 2–4 carbon atoms in the alkyl groups or mixtures thereof;

wherein the hard acrylic polymer has a glass transition temperature of about 75° to 90°C. and a number average molecular weight of 3,000–10,000;

B. 10–25 percent by weight of a soft acrylic polymer consisting essentially of
   1. 40–60 percent by weight, based on the weight of the soft acrylic polymer, of methylmethacrylate,
   2. 30–56 percent by weight, based on the weight of the soft acrylic polymer, of an alkyl acrylate or an alkyl methacrylate having 2–14 carbon atoms in the alkyl groups,
   3. 4–10 percent by weight, based on the weight of the soft acrylic polymer, of a hydroxy alkyl acrylate or a hydroxy alkyl methacrylate having 2–4 carbon atoms in the alkyl groups or mixtures thereof;

wherein the soft acrylic polymer has a glass transition temperature of about 0° to 30°C. and a number average molecular weight of about 8,000–20,000;

C. 7–19.98 percent by weight of an alkylated melamine formaldehyde resin having 1–8 carbon atoms in the alkyl group;

D. 6–15 percent by weight of dihydroxy functional plasticizer of a polyester resin having a molecular weight of 520–4,000 or a polycaprolactone having a molecular weight of 520–2,000; and

E. 0.02–2.0 percent by weight of a blocked acid catalyst of a blocked paratoluene sulfonic acid catalyst.

3,846,369

COLOURATION OF POLYMERIC MATERIALS

James Lyon Whyte, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 94,564, Dec. 2, 1970, Pat. No. 3,728,124.
This application Apr. 16, 1973, Ser. No. 351,611
Claims priority, application Great Britain, Dec. 5, 1969, 59512/69. The portion of the term of this patent subsequent to Apr. 17, 1990, has been disclaimed.
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **3 Claims**

1. A method of producing a polyester film which is resistant to light piping by including therein a grey dye mixture which consists of up to 0.15 percent by weight of the polyester of at least one dye selected from 6-paratoluidino-3-methyl 1'9' anthrapyridone and tetrachlorophthalo perinone and up to 0.15 percent by weight of the polyester of at least one dye selected from indanthrone and 1,4 bis (4-n-butyl anilino)-5,8, dihydroxy anthraquinone, said method comprising including the dye mixture in the polyester-forming reaction mixture, subjecting said reaction mixture to polycondensation while agitating to form said polyester with the dye mixture uniformly incorporated therein and then extruding the polyester to form said film.

3,846,370

SEALING ELEMENT AND COMPOSITION

Albert R. Bunk, Columbus, and Bailey Bennett, Worthington, both of Ohio, assignors to Shatterproof Glass Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 186,401, Oct. 4, 1971, abandoned. This application June 7, 1973, Ser. No. 367,815
Int. Cl. C08c *11/18, 11/08, 11/40*
U.S. Cl. 260—42.36 **5 Claims**

1. An elongated strip as a hermetic sealing element in multiple glaze construction, which elongated strip is a tacky, mois-

ture and vapor impervious composition consisting essentially of:

A. a heat-processed, partially cured low-molecular-weight butyl rubber from masticating at between 280°F and 310°F for at least 12 and up to 60 minutes total masticating time of a blend of components, which for heat-processing and partial curing, in parts by weight consists essentially of:

a. 100 parts of the low-molecular-weight butyl rubber which is a copolymer, having a viscosity average molecular weight between 10,000 and 45,000 of 96 to 95.5 parts of isobutylene and 4 to 4.5 parts of isoprene;

b. up to 5 parts of zinc oxide;

c. up to 10 parts of carbon black; and

d. between 2¼ and 9 parts of a nonsulfur cure system which is devoid of sulfur and sulfur-containing constituents and which contains a constituent providing a dinitrosobenzene cross-linking moiety with

i. between 1.5 and 8.5 parts total from at least two of from 0 to 2 parts of N-(2-methyl-2-nitropropyl)-4-nitrosoaniline, from 0 to 2.5 parts of tetrachloro-p-benzoquinone, and from 0.25 to 5 parts of p-quinonedioxime, and with less than one-half of said total consisting of N-(2-methyl-2-nitropropyl)-4-nitrosoaniline, and with at least 1.5 parts of tetrachloro-p-benzoquinone included when said total is 5 and greater, and

ii. contains from 0 to 4 parts of lead dioxide with inclusion of between ¾ and 3¾ parts when the tetrachloro-p-benzoquinone is less than 1.5 or the total of (i) constituents is less than 5, and from 0 to ½ part of p,p-diaminodiphenylmethane with inclusion of between 0.1 and 0.5 part when the tetrachloro-p-benzoquinone is 1.5 and greater or the total of (i) constiuents is 5 and greater.

3,846,371

MASTERBATCHING ELASTOMER BLENDS

Rolland Shih-Yuan Ro, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 9, 1973, Ser. No. 349,303
Int. Cl. C08c *11/18*; C08d *9/08*
U.S. Cl. 260—42.33 **5 Claims**

1. A process for blending a chloroprene elastomeric polymer and an elastomeric polymer or its allylically brominated derivative comprising ethylene, propylene and at least one non-conjugated diene which consists essentially of separately adding to said chloroprene polymer a semi-reinforcing black, and adding a high reinforcing black to the ethylene containing polymer, blending the two black containing elastomers in the uncured state, curing the elastomers in the presence of one or more curing agents compatible with the elastomers in the blend and recovering a blend of elastomers having at least one optimized property.

3,846,372

SMOKE RETARDANT VINYL CHLORIDE POLYMER COMPOSITIONS

Lawrence C. Mitchell, Mt. Vernon, Ind., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 19, 1973, Ser. No. 352,505
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 R **5 Claims**

1. As a composition of matter, a polyvinyl halide admixed with a smoke retardant amount of a vanadium oxide.

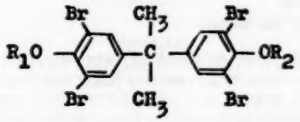
3,846,373

FLAME-RETARDANT ACRYLIC SYNTHETIC FIBERS HAVING IMPROVED PROPERTIES

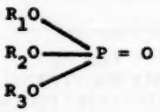
Kenji Takeya; Hiroshi Suzuki, and Tadashi Ichimaru, all of Okayama, Japan, assignors to Japan Exlan Company, Limited, Osaka, Japan

Filed Sept. 1, 1972, Ser. No. 285,664
Claims priority, application Japan, Sept. 4, 1971, 46-68218
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.95 G **9 Claims**

1. A flame-retardant monocomponent acrylic synthetic fiber comprising an acrylonitrile polymer selected from the group consisting of homopolymers of acrylonitrile and copolymers containing at least 70 percent acrylonitrile and up to 30 percent of at least one monoethylenically unsaturated monomer copolymerized therewith, and having incorporated in such fibers 3–40 percent by weight of a fluid mixture having a viscosity of at least 6,000 centipoises at 25°C obtained by dissolving (1) an organic compound selected from the group consisting of halogenated paraffins, halogenated aralkyl phosphates, halogenated aryl phosphates, halogenated diphenyl ethers, halogenated phenols, halogenated alkyl ethers of the halogenated phenols, tetrabromobisphenol-A and etherified derivatives of tetrabromobisphenol-A represented by the formula



wherein each of R_1 and R_2, respectively, represents alkyl, cycloalkyl, aralkyl or aryl which are unsubstituted or substituted by halogen, said R_1 and R_2 groups respectively having 2-20 carbon atoms, in (2) a liquid halogenated aliphatic phosphate represented by the formula



wherein each of R_1, R_2 and R_3 represents a halogenated aliphatic hydrocarbon radical having up to eight carbon atoms.

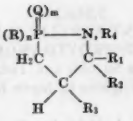
3,846,374

1,2-AZAPHOSPHOLANES AND THEIR 2-OXIDES, 2-SULFIDES AND SALTS AND PREPARATION THEREOF

Charles Edward Farley, Norwalk, and Martin Grayson, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 801,748, Feb. 24, 1969, abandoned. This application May 27, 1971, Ser. No. 289,373
Int. Cl. C07d *105/02*
U.S. Cl. 260—551 P **7 Claims**

1. A 1,2-azaphospholane compound or salt, consisting of a. a compound having the formula



wherein R is selected from alkyl of 1 to 18 carbon atoms, phenyl, mono- and di-substituted alkylphenyl, chlorophenyl, and bromophenyl, R_1, R_2 and R_3 are hydrogen or lower alkyl, R_4 is a member of the group consisting of hydrogen, lower alkyl, phenyl and lower alkylphenyl, Q is oxygen or sulfur, *n* is 1 and *m* is zero or 1, or

b. a salt having a cation of the formula shown wherein R, R_1, R_2, R_3 and R_4 are as defined, m is zero and n is 1 or 2, with a salt forming anion selected from halogen, nitrate, sulfate, sulfide, acetate, carbonate, phenol, and thiophenol.

3,846,375

AROMATIC POLYETHER OXETANE RESINS

Robert L. Wear, West Saint, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

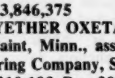
Continuation of Ser. No. 210,193, Dec. 20, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,800

Int. Cl. C08g *23/04*

U.S. Cl. 260—61 **14 Claims**

1. An aromatic containing polyether polymer consisting essentially of

I. units of the formula

(a)  and,

II. 0 - 90 mole percent units of the formula

b. — O — Ar^1 — O — Ar^2 —

wherein

Ar^1 is an aromatic nucleus,

Ar^2 is an aromatic nucleus substituted with an electron withdrawing group capable of activating a halogen substituent in the aromatic nucleus, and

A^1 and A^2 are lower aliphatic radicals, and

R is selected from the group consisting of hydrogen and lower alkyl.

3,846,376

THERMALLY STABLE PERFLUOROALKYLENE ETHER BIBENZOXAZOLE POLYMERS

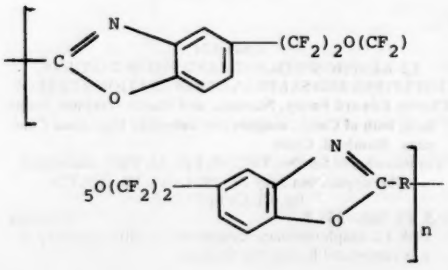
Robert C. Evers, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 26, 1973, Ser. No. 401,000

Int. Cl. C08g *23/00*

U.S. Cl. 260—61 **11 Claims**

1. A thermally stable polymer consisting essentially of repeating units having the following formula:



wherein R is $(CF_2)_6$, $(CF_2)O(CF_2)_2O(CF_2)$, or $(CF_2)_4O(CF_2)_2O(CF_2)$, and *n* is an integer sufficient to provide an inherent viscosity from about 0.10 to 1.0 when measured at 25°C as a 0.2 weight percent solution in hexafluoroisopropanol.

3,846,377

METHOD OF PRODUCING POLYETHYLENE TEREPHTHALATE FIBERS

Arnon Siegmann, Haifa, Israel, assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 198,407, Nov. 12, 1971, abandoned. This application July 2, 1973, Ser. No. 375,582

Int. Cl. C08g *17/00;* **B28b** *3/20*

U.S. Cl. 260—75 T **9 Claims**

1. A process for forming polyethylene terephthalate fibers comprising extruding, under a pressure in the approximate range of 30,000 to 80,000 psi and at a temperature in the approximate range of 250°C. to 260°C., a melt of polyethylene terephthalate through a spinneret provided with tapered apertures of a generally frusto-conical shape, and immediately cooling the filaments exiting from said spinneret to a temperature below about 85°C.

3,846,378

SYNCHRONOUS PROCESS FOR THERMALLY-CURABLE BLOCKED POLYURETHANES

Azel Alan Griswold, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 17, 1972, Ser. No. 244,921

Int. Cl. C08g *22/32*

U.S. Cl. 260—77.5 TB **19 Claims**

1. A synchronous partial-blocking process for making an oxime-blocked intermediate polyurethane comprising the steps of

a. preparing a pre-polymer-free reaction mixture by mixing with an unblocked organic polyisocyanate an amount of an oxime equivalent to 5–35 percent of the isocyanate groups, at least one polyol in an amount such that the sum of the isocyanate-active hydrogens in the polyol and the oxime is at least substantially equivalent to said isocyanate groups and a catalyst and

b. allowing the polyisocyanate to react with the oxime and polyol in said mixture, the oxime blocking its equivalent of the isocyanate groups, and the polyol reacting with the residual isocyanate groups to form said oxime-blocked intermediate polyurethane.

3,846,379

POLYAMIDE SHOCK ABSORBER PISTON FROM TEREPHTHALIC ACID AND BRANCHED DIAMINE

Johannes Schneider, and Wolfgang Pungs, both of Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed July 6, 1971, Ser. No. 160,120

Claims priority, application Germany, July 4, 1970, 2033193

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 S **4 Claims**

1. A shock absorber piston, adapted to be guided in a cylinder containing a damping fluid and to be attached to a piston rod, said piston being produced from amorphous polyamide consisting essentially of the polymeric condensation product of the dimethyl ester of terephthalic acid and a mixture of 2,2,4- and 2,4,4-trimethylhexamethylenediamine, said polyamide exhibiting a viscosity of about 100 to about 200 measured in a 0.5 percent by weight solution in m-cresol at 25°C. and prior to the formation of said piston having been conditioned for 8 to 16 hours at a temperature from about 110°C. to about 150°C. in an inert gas atmosphere under vacuum.

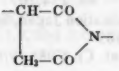
3,846,380

POLYAMINO ACID DERIVATIVES AND COMPOSITIONS CONTAINING SAME

Yasuo Fujimoto, 1177-4, Ichigao-cho, Midori-ku, Yokohama-shi, Kanagawa-ken, and Masayuki Teranishi, Yamazaki-danchi 7-9-108, 2130, Yamazaki-cho, Machida-shi, Tokyo, both of Japan

Filed Oct. 31, 1972, Ser. No. 302,417
Int. Cl. C08g *20/08*
U.S. Cl. 260—78 A 19 Claims

1. A process for preparing a polyaspartic acid derivative which comprises reacting a polyimide having in its molecule the group

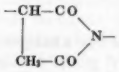


as a repeating unit, which is obtained by heat condensation of a compound selected from the group consisting of aspartic acid; ammonium salts of aspartic acid, malic acid, maleic acid and fumaric acid; and mono- and diamides of aspartic acid, malic acid, maleic acid and fumaric acid

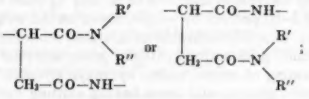
with a primary or secondary amine represented by the formula

(wherein R′ is a hydrogen atom or or an alkyl or alkenyl group having one to 20 carbon atoms and R″ is an alkyl or alkenyl group having 8 to 20 carbon atoms), the amount of which is 0.005 - 1.0 equivalent based on the imide groups of the polyimide

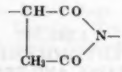
at room temperature or a higher one up to 100°C in a solvent in order to partially convert the repeating unit of polyimide



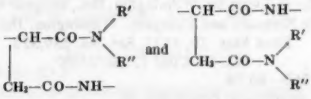
into



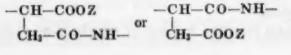
and hydrolyzing the resulting polyimide derivative with an alkali selected from alkali metal and alkaline earth metal hydroxides and carbonates in order to convert residual groups



and some of the groups

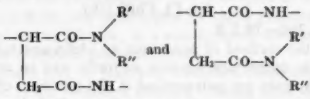


into

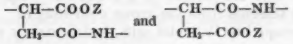


wherein Z represents a hydrogen atom, an alkali metal or an alkaline earth metal,

the finally produced polyaspartic acid derivative having in its molecule at least one of the groups



together with at least one of the groups



as a repeating unit.

3,846,381

IMPROVED PROCESS FOR CONTINUOUSLY PRODUCING POLYHEXAMETHYLENE ADIPAMIDE BY CARRYING OUT WATER REMOVAL STEP IN A FORMIC ACID VAPOR CONTAINING ATMOSPHERE

Wo Kong Kwok, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 16, 1973, Ser. No. 360,922
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 2 Claims

1. In the continuous process for preparing a fiber forming polyamide from a polyamide-forming composition comprised of adipic acid and hexamethylene diamine wherein the composition is initially polymerized at amidation temperatures and pressures, and the molten polyamide obtained is ultimately passed to a finisher vessel where the molecular weight is increased by removing water from the polymerizate at temperatures of between about 250°C. and 320°C. and pressures of between about 25 mm. and 350 mm. of mercury, the improvement for reducing the rate of formation of gel deposits in the finisher vessel which comprises introducing formic acid into the atmosphere above the molten polyamide in the finisher and maintaining the formic acid in such atmosphere at a concentration of between about 5 percent and about 25 percent by weight, based on the weight of the atmosphere.

3,846,382

STERILE MEDICAL DUSTING POWDER

Wallace Burton Ramsey, Pittsburgh, Pa., and Darwin Fiske DeLapp, New Canaan, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 118,974, Feb. 25, 1971, Pat. No. 3,781,349. This application July 27, 1973, Ser. No. 383,236
Int. Cl. C08g *53/03*
U.S. Cl. 260—78.3 R 1 Claim

1. A sterile medical dusting powder comprising a finely divided polyglycolic acid powdery material having more than 80%, by weight, of a particle size in the range of 1.5 to about 8 microns, less than 15%, by weight, of a particle size within the range of about 10 to 15 microns, and less than 1%, by weight, of the size of about 30 microns.

3,846,383

METHOD FOR PRODUCING COPOLYMERS

Fukuhito Uyama; Hisashi Tanaka, and Sukenao Ito, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Continuation-in-part of Ser. No. 271,469, July 13, 1972, abandoned. This application Aug. 17, 1973, Ser. No. 389,293

Int. Cl. C08f 1/80

U.S. Cl. 260—78.5 R 18 Claims

1. In the method of producing an olefin-unsaturated acid anhydride copolymer wherein an olefin and an unsaturated acid anhydride are polymerized in the presence of a radical type polymerization catalyst in a solvent which dissolves reactant monomers but does not dissolve the copolymer products substantially,

the improvement which comprises incorporating into the polymerization reaction mixture, an effective amount, not less than 0.001 percent of the weight of the unsaturated acid anhydride, of a molecular weight lowering agent selected from the group consisting of

1. Groups I to IV metal salts, hydroxides or oxides, and

2. compounds having primary, secondary or tertiary aliphatic amine, primary or secondary aromatic amine or ammonium groups, whereby the molecular weight of the copolymer is lowered.

3,846,384

POLYMERIZATION PROCESS

Lester Adrian Doe, Jr., Newtown, Conn., assignor to GAF Corporation, New York, N.Y.

Filed Jan. 19, 1972, Ser. No. 219,164

Int. Cl. C08f 15/10

U.S. Cl. 260—80.3 E 14 Claims

1. A polymerization process which comprises contacting an acrylic compound selected from the group consisting of acrylic acid and the alpha-alkyl homologs thereof with a under substantially anhydrous conditions of the formula $H_2C{=}CH{-}O{-}R_1$ wherein R_1 has 1 to 18 carbon atoms vinyl ether compound co-polymerizible therewith in an inert organic hydrocarbon solvent in the presence of a free radical-supplying catalyst until polymer formation occurs.

3,846,385

PREPARATION OF SOLUTION POLYMERS USING A BARIUM DI-TERT ALKOXIDE AND A DI-BUTYL MAGNESIUM CATALYST COMPLEX

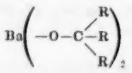
Ivan Glen Hargis, Tallmadge, and Russell A. Livigni, Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed July 16, 1973, Ser. No. 379,507

Int. Cl. C08d 1/32; C08f 19/08, 1/74

U.S. Cl. 260—80.7 10 Claims

1. The method which comprises polymerizing under inert conditions in a hydrocarbon solvent at a temperature of from about −90° to 100°C. a polymerizable vinyl monomer having an activated double bond and having up to 14 carbon atoms and being free of groups which would destroy the catalyst complex, with a catalyst in a minor effective amount sufficient to polymerize said monomer to obtain a polymer and comprising a hydrocarbon soluble complex of (1)



in which R is selected from the group consisting of methyl, ethyl and propyl radicals and wherein each R may be the same or different and (2) dibutyl magnesium in which at least about 30 mole percent of the butyl radicals are secondary butyl radicals, the mole ratio of said barium compound to said magnesium compound being from about 0.25 to 3.25, said solvent being a solvent for said monomer, polymer and catalyst complex.

3,846,386

CROSS-LINKED COPOLYMER ACRYLONITRILE FIBERS OR FILMS

Akira Yamamoto; Kunio Nakaoji; Kunio Oohara; Zenjiro Momiyama; Heiichiro Murakami, and Akira Tomita, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha

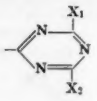
Division of Ser. No. 166,313, July 26, 1971, Pat. No. 3,759,849, which is a division of Ser. No. 753,515, Aug. 19, 1968, Pat. No. 3,626,049. This application July 24, 1972, Ser. No. 274,207

Claims priority, application Japan, Sept. 2, 1967, 42-56502; Dec. 22, 1967, 42-82509

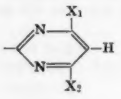
Int. Cl. C08f 19/00

U.S. Cl. 260—80.72 1 Claim

1. An acrylic fiber or film of a cross-linked copolymer consisting essentially of (a) a vinyl monomeric material consisting mainly of acrylonitrile, (b) 0.03 to 10 percent by weight, based on the weight of the copolymer, of a polymerizable unsaturated monomer having a group selected from the class consisting of halogenated S-triazinyl groups of the general formula:



and halogenated pyrimidinyl groups of the general formula:



wherein each of X_1 and X_2 is a halogen, hydrogen, alkyl group, amino group, hydroxyl group, mercapto group or carboxyl group, and wherein at least one of X_1 and X_2 must be a halogen, (c) 0.3–10 percent by weight, based on the weight of the copolymer, of a polymerizable unsaturated monomer component containing an active hydrogen group selected from the class consisting of amino, imino, hydroxyl, glycidyl, pyrazinyl and quinolyl groups, said cross-linking existing between the active hydrogen group of component (c) and the halogenated S-triazinyl group or halogenated pyrimidinyl group of component (b).

3,846,387

CHAIN SATURATED COPOLYMERS OF ETHYLENE, ALPHA MONOOLEFINS, AND TRIENES CONTAINING SIDE-CHAINS WITH NON-TERMINAL CONJUGATED UNSATURATION

Aaron Chung Liong Su, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1972, Ser. No. 239,322

Int. Cl. C08f 15/40, 27/00

U.S. Cl. 260—80.78 8 Claims

1. An elastomeric copolymer of

a. ethylene

b. at least one low molecular weight α-monolefin, and

c. at least one of 1,4,6-octatriene and 1,6,8-decatriene, said copolymer having an inherent viscosity of about 0.2 to 6.0 and being capable of undergoing a Diels-Alder reaction with a dienophile.

3,846,388

COPOLYMER OF A CONJUGATED DIOLEFIN AND VINYL CHLORIDE AND MANUFACTURING PROCESS THEREFOR

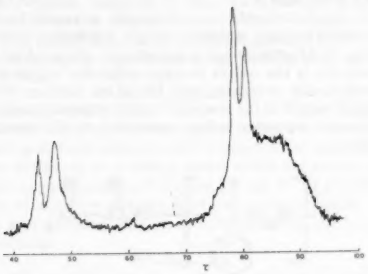
Takashi Ohashi, and Ryozo Sakata, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Chuo-ku, Tokyo, Japan

Continuation of Ser. No. 122,445, March 9, 1971, abandoned. This application May 9, 1973, Ser. No. 358,807

Claims priority, application Japan, Oct. 7, 1970, 45-87476; Mar. 10, 1970, 45-19742

Int. Cl. C08d *3/04, 1/18*

U.S. Cl. 260—82.1 **11 Claims**



1. A process for manufacturing a random copolymer of a conjugated diolefin and vinyl chloride, having a vinyl chloride content of 5 to 50 mol percent which comprises carrying out the copolymerization in the presence of a halogenated hydrocarbon as solvent, at a temperature of −100° to 80°C, the molar ratio of said conjugated diolefin to vinyl chloride being 98/2 to 2/98, using an unmodified catalyst, in the presence of at least the vinyl chloride monomer, said catalyst being selected from the group consisting of acidic Friedel-Crafts metal halide compounds wherein the metal is of Groups II to VIII of the Periodic Table and alkylaluminum halide compounds of the formula, $Al\,R_n\,X_{3-n}$ wherein R represents an alkyl group, X represents a halogen atom and n represents 1 or 1.5 so that the molar ratio of said catalyst to the total amount of the monomers as charged is 0.05 to 0.0001.

3,846,389

PRODUCTION OF ALTERNATING COPOLYMERS OF CONJUGATED DIENES AND CONJUGATED POLAR VINYL MONOMERS

Junji Furukawa, No. 64, Iori-cho, Kitashirakawa, Sakyo-ku, Kyoto; Yutaka Iseda; Kazuo Haga, both of No. 2800-1, Ogawa-Higashi-cho, Kodaira, Tokyo, and Nobuyuki Kataoka, No. 25-7, 4-chome, Nakaochiai, Shinjuku-ku, Tokyo, all of Japan

Division of Ser. No. 103,178, Dec. 31, 1970, , which is a continuation-in-part of Ser. No. 740,342, June 26, 1968,. This application Mar. 28, 1972, Ser. No. 345,771

Claims priority, application Japan, Mar. 28, 1968, 43-20335

Int. Cl. C08d *1/14, 1/56*

U.S. Cl. 260—83.5 **17 Claims**

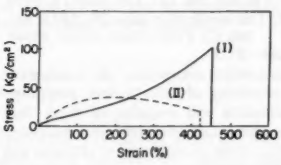
1. A method of producing alternating copoloymers of conjugated dienes and cojugated polar vinyl monomers, wherein the conjugated diene unit and the conjugated polar vinyl monomer unit are bonded alternately, which comprises copolymerizing a conjugated diene having 4 to 10 carbon atoms and a conjugated polar vinyl monomer selected from the group consisting of methyl acrylate, ethyl acrylate, propyl acrylate, butyl acrylate, methyl methacrylate, and ethyl methacrylate, the molar ratio of said conjugated diene to said polar vinyl monomer being 1:10 to 10:1, at a temperature of −78°C to 50°C, under the monomer gas with or without an inert gas, at a pressure from one determined by vapor pressure in the reaction system to 50 atm., in a non-aqueous medium in the presence of a catalyst prepared from

a component (A): at least one transition metal compound soluble in the monomer solution selected from the group consisting of halides, alcoxides, acetylacetonates, and salts of carboxylic acids of metals and oxy-metals of the Group IV–b and V–b in the Periodic Table and a component (B): an aluminum-containing component selected from the group consisting of alumininum compounds having the general formulae

R_2AlX, $R_3Al_2X_3$, and $RAlX_2$

and a combination of two or more aluminium compounds having the general formulae

R_2AlX, R_3AlCX_2, R_3Al, and AlX_3



wherein R represents a hydrocarbon radical selected from the group consisting off alkyl radicals having 1 to 10 carbon atoms and X represents a halogen radical selected from the group consisting to Cl and Br atoms, and wherein the ratio of the total number of the hydrocarbon radicals to the total number of halogen atoms in said aluminum-containing component is a positive number not greater than 2.0, and R and X in the aluminum compounds constituting said component (B) may be the same or different,

said catalyst being prepared at a temperature of −100°C to 20°C, after complexing at least one of the components (A) and (B) with a basic organic compound selected from the group consisting of organic nitriles, α,β-unsaturated carboxylic acid esters, benzoates, phenyl alkyl teritiary amines and thiophene avoiding direct contact of the conponents (A) with (B), the transition metal atom in the component (A) being $1:10^5$ to 1:1 g-atom based on a 1 g-atom of Al in the component (B), the total amount of metal atoms in the components (A) and (B) being $1:10^4$ to 1:10 g-atom based on 1 mole of the total amount of fed monomers.

3,846,390

PROCESS FOR PRODUCING POLYVINYL CHLORIDE IN THE PRESENCE OF ALKYL THIOGLYCOLATE AS A CHAIN TRANSFER AGENT

Ikoh Ito; Shojiro Ito, and Tomoyuki Emura, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 23, 1972, Ser. No. 237,502

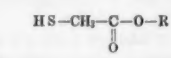
Claims priority, application Japan, Mar. 24, 1971, 46-17459

Int. Cl. C08f *3/30, 15/06, 15/08*

U.S. Cl. 260—86.3 **4 Claims**

1. A process for producing vinyl chloride polymers which comprises polymerizing vinyl chloride or a monomeric mixture comprising at least 80 percent by weight of vinyl chloride and up to 20 percent by weight of an other ethylenically unsaturated monomer copolymerizable therewith at a temper-

ature between about 50°C and about 70°C in an aqueous medium in the presence of a catalyst selected from the group consisting of an oilsoluble catalyst and a water-soluble catalyst and 0.01 to 2 parts by weight of an alkyl thioglycolate chain transfer agent of the formula:



wherein R represents an alkyl group having 4 to 12 carbon atoms, per 100 parts by weight of the total monomer.

3,846,391

OXY-BIS-(N-ALKYLAMIDES) AND THEIR USE AS SLIP ADDITIVES

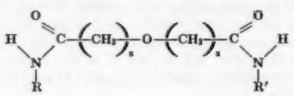
Richard James Powell, Irange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 142,335, May 11, 1971, Pat. No. 3,766,269. This application June 26, 1973, Ser. No. 373,738

Int. Cl. C08f *15/00, 19/10, 45/44*

U.S. Cl. 260—87.3 **6 Claims**

1. A composition comprising (A) a polymer selected from the class consisting of polyethylene, polypropylene, copolymers of ethylene and α-olefins of more than two carbon atoms, copolymers of propylene and α-olefins of more than three carbon atoms, copolymers of ethylene and vinyl acetate wherein the copolymer contains up to about 12 percent by weight vinyl acetate copolymerized units, and mixture thereof and (B) 300 to 20,000 parts per million by weight of the composition having the formula



wherein x is 1 or 2, R is an alkyl group of from 4 to 22 carbon atoms, and R′ is an alkyl group of 4 to 22 carbon atoms.

3,846,392

METHOD OF MANUFACTURING CYCLOOLEFINES

Shoichi Matsumura, Akashi, and Itaru Hatano, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 11, 1972, Ser. No. 287,618

Claims priority, application Japan, Sept. 20, 1971, 46-3628

Int. Cl. C08f *1/34, 1/38, 1/42*

U.S. Cl. 260—93.1 **11 Claims**

1. A method of manufacturing polymer wherein a cycloolefine of 4–5 carbon atoms or more than 7 carbon atoms having at least one double bond in a ring is polymerized in an inert solvent at a temperature of from −50°C to 80°C using an inert solvent soluble homogeneous catalyst component (A) produced by reacting oxide of tungsten or molybdenum and lewis acid in a halogenated hydrocarbon at a temperature of 0°C or more or using a catalytic system wherein said catalyst component (A) is combined with an organometallic compound (B) including a metal of group I through group IV, wherein a molar ratio of tungsten or molybdenum in the component (A) to said organometallic compound (B) is 1: (0.1 to 50), and wherein a mole ratio of tungsten or molybdenum in the component (A) to cyclopentene is 1: (5,000 to 10,000).

3,846,393

EPOXY AND GLYCOL TERMINATED MACROMOLELCULAR MONOMERS HAVING A SUBSTANTIALLY UNIFORM MOLECULAR WEIGHT DISTRIBUTION

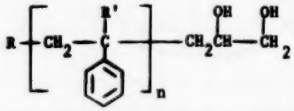
Ralph Milkovich, Naperville, and Mutong T. Chiang, Palos Heights, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 282,099, Aug. 21, 1972, Pat. No. 3,786,116, which is a continuation-in-part of Ser. No. 244,205, April 14, 1972, , which is a continuation-in-part of Ser. No. 117,733, Feb. 22, 1971, abandoned. This application July 2, 1973, Ser. No. 376,108

Int. Cl. C08f *27/00, 7/04*

U.S. Cl. 260—93.5 A **3 Claims**

1. A copolymerizable macromolecular monomer having a substantially uniform molecular weight distribution such that its ratio of Mw/Mn is not substantiallyy above about 1.1, wherein Mw is the weight average molecular weight of the macromolecular monomer, and Mn is the number average molecular weight of the macromolecular monomer, said macromolecular monomer being represented by the structural formula:



wherein R is lower alkyl and R′ is either hydrogen or methyl, and n is a value such that the molecular weight of the macromolecular monomer is in the range of from about 5,000 to about 50,000.

3,846,394

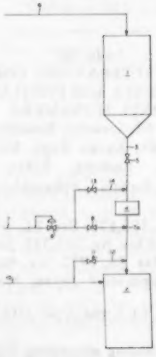
INTRODUCING CATALYST INTO A REACTOR

John Mitacek, deceased, late of Bartlesville, Okla. (by Bill Mitacek, administrator), assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 56,930, July 21, 1970, abandoned. This application June 6, 1973, Ser. No. 367,507

Int. Cl. C08f *1/56, 1/98*

U.S. Cl. 260—93.7 **9 Claims**



1. In a process for the introduction of at least one constituent of a catalyst system and a diluent into a reactor wherein

at least a first portion of said diluent forms a slurry of said catalyst constituent and wherein said slurry of said catalyst constituent and said first portion of diluent is transferred from a storage zone for said slurry of said catalyst constituent and said diluent to a metering zone, passed through said metering zone and thereafter introduced into said reaction zone, the improvement which comprises continually introducing a second portion of said diluent into said reaction zone by way of a first diluent addition zone intermediate of said metering zone and said storage zone for a slurry of said catalyst constituent and said first portion of said diluent whereby said second portion of diluent and slurry of said first portion of diluent and said catalyst constituent are passed through said metering zone and into said reaction zone.

3,846,395
PLASTICS COMPOSITIONS

David John Harper, and John Forgie McKellar, both of Blackley, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 26, 1971, Ser. No. 192,661
Claims priority, application Great Britain, Nov. 2, 1970, 51920/70
Int. Cl. C08f *27/28*
U.S. Cl. 260—94.9 GC **6 Claims**

1. A poly-alpha-olefin composition selected from the group consisting of homopolymers and copolymers of alpha-monoolefins having up to 6 carbon atoms which has incorporated therein as prodegradant 0.001percent up to 10 percent by weight of a ketone selected from the group consisting of p-laurly acetophenone or p-laurly benzophenone, [of the general formula

$$R^3—CO—R^4$$

where R^3 is a phenyl group with one of more substituents selected from the group consisting of alkyl and halogen, and where R^4 is a alkyl group, a phenyl group or a phenyl group with one or more substituents selected from the group consisting of alkyl and halogen,] said poly-alpha-olefin composition being capable of degradation by ultraviolet light faster than a poly-alpha-olefin composition without said prodegradant.

3,846,396
COUPLED PEROXIDES

Antonio Joseph D'Angelo, Buffalo; Orville Leonard Mageli, and Chester Stephen Sheppard, both of Kenmore, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 737,359, June 17, 1968, Pat. No. 3,725,455. This application Mar. 16, 1973, Ser. No. 342,106
Int. Cl. C08f *1/60, 27/00*
U.S. Cl. 260—94.9 GA **2 Claims**

1. In the process of crosslinking polyethylene using as the crosslinking agent a free radical affording compound, the improvement which comprises using as said agent a peroxide of the formula R-W-R′ where:

a. W is selected from —C(=O)—, —C(=O)R^4C(=O)—, —C(=O)C(=O)—,

b. R and R′ are identical and are selected from $R_3OO—C(R_1)(R_2)—R^2O—$, $(R_3OO)_2C(R_4)—R^2O—$, $R_3OOC(=O)R^3O—$, $R_3OOC(=O)OR^3O—$, $R_3OC(=O)O-O—C(R_1)(R_2)—R^2O—$, and $R_1C(=O)OO—C(R_1)(R_2)—R^2O—$;

c. R_1 and R_2 are aliphatic having 1–12 carbon atoms, cycloaliphatic having 3–12 carbon atoms, or aromatic having 6–12 carbon atoms;

d. R_3 is aliphatic or cycloaliphatic, each having 4–10 carbon atoms and the carbon atom joined to the peroxy oxygen atom is a tertiary carbon atom;

e. R_4 is aliphatic having 1–10 carbon atoms or cycloaliphatic having 3–12 carbon atoms;

f. R_5 is lower alkyl, cycloalkyl, aralkyl, aryl, alkoxy, cycloalkoxy, aralkoxy, or aryloxy;

g. R_6 is H or lower alkyl;

h. Y is the diradical O, S, or N—R_6;

j. R^2 is an aliphatic diradical having 1–10 carbon atoms or a cycloaliphatic diradical having 3—12 carbon atoms;

k. R^3 is an aliphatic diradical having 1–10 carbon atoms, cycloaliphatic diradical having 3–12 carbon atoms, aromatic diradical having 6–12 carbon atoms, or araliphatic diradical having 7–16 carbon atoms;

l. R^4 is selected from R^3, YR^3Y, $R^3C(=O)YR^3YC(=O)R^3$, $YR^3YC(=O)YR^3YC(=O)YR^3Y$, $YR^3YC(=O)R^3C(=O)YR^3Y$, $YR^3C(=O)YR^3C(=O)YR^3Y$, $YR^3C(=O)YR^3YC(=O)R^3Y$, $YR^3YC(=O)YR^3Y$, $YR^3YC(=O)R^3Y$ and YR^3YR^3Y; and

m. R_7 and R_8 are selected from H, alkyl of 1–10 carbons and cycloalkyl of 3–12 carbons and, when R_7 is H, R_8 can also be aryl of 6–12 carbons, and R_7 and R_8 when taken together form alkylene of 2–11 carbons.

3,846,397
PROCESS FOR UTILIZING BARLEY MALT

John H. Ernster, 4530 Sugarhill Dr., Rolling Hills Estate, Calif. 90274

Filed Apr. 6, 1970, Ser. No. 26,025
Int. Cl. C07g *7/00*
U.S. Cl. 260—112 R **2 Claims**

1. In a process for recovering protein solids from brewer's grains in which said grains are treated with an alkaline solution and in which said alkaline solution is thereafter treated to recover protein solids, the improvement which comprises:

said treatment with an alkaline solution being carried out in an alkaline solution having a pH of about 9 at a temperature within the range of from 180° to 212°F. so as to place protein material in said brewer's grains in solution in order to produce a mixture of an insoluble residue and a protein solution,

separating said residue from said solution,

acidifying said solution to a pH of about 6 so as to precipitate protein solids from said solution, and

separating said precipitate protein solids from the liquid in said solution.

3,846,398
METHOD FOR CONTROLLED STEPWISE SYNTHESIS OF POLYPEPTIDES UTILIZING N-THIOCARBOXY ANHYDRIDES OF AMINO ACIDS AS REAGENTS

Ralph F. Hirschmann, Scotch Plains, and Robert G. Denkewalter, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 830,174, April 17, 1969, abandoned, which is a continuation of Ser. No. 545,855, April 28, 1966, abandoned. This application Mar. 1, 1971, Ser. No. 120,062
Int. Cl. C07c *103/52;* **C08h** *1/00*
U.S. Cl. 260—112.5 **7 Claims**

1. The process for the controlled stepwise synthesis of peptides and protected derivatives thereof which comprises reacting a starting amino compound selected from the group consisting of amino acids, peptides, and derivatives thereof wherein additional functional groups are protected, with a TCA reagent selected from the group consisting of N-

thiocarboxy amino acid anhydrides, and derivatives thereof wherein additional functional groups are protected, said reaction being conducted by bringing together said amino compound and said TCA reagent in an aqueous medium while maintaining the pH at the protecting pH (whereby the only amino group present in appreciable concentration in reactive form during the course of the reaction is the amino group of the starting amino compound which is to participate in the reaction with the said TCA reagent) thereby forming the corresponding N-thiocarboxy peptide, and dethiocarboxylating by acidification, standing, heating or freeze-drying said N-thiocarboxy peptide.

3,846,399

PROCESS FOR CONTROLLED STEPWISE SYNTHESIS OF POLYPEPTIDES

Ralph F. Hirschmann, Scotch Plains, and Robert G. Denkewalter, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 816,177, April 10, 1969, abandoned, which is a continuation of Ser. No. 469,310, July 2, 1965, abandoned. This application Mar. 1, 1971, Ser. No. 120,063

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **9 Claims**

1. The process for the controlled stepwise synthesis of peptides and protected derivatives thereof which comprises reacting a starting amino compound selected from the group consisting of amino acids, peptides, and derivatives thereof wherein additional functional groups are protected, with an NCA reagent selected from the group consisting of N-carboxy amino acid anhydrides, and derivatives thereof wherein additional functional groups are protected, said reaction being conducted by bringing together said amino compound and said NCA reagent in an aqueous medium while maintaining the pH at the protecting pH (whereby the only amino group present in appreciable concentration in reactive form during the course of the reaction is the amino group of the starting amino compound which is to participate in the reaction with the said NCA reagent) thereby forming the corresponding N-carboxy peptide and, decarboxylating by acidification, standing, heating or freeze-drying said N-carboxy peptide.

3,846,400

NOVEL PROCESS FOR PRODUCING ANTIBIOTICS BLEOMYCIN

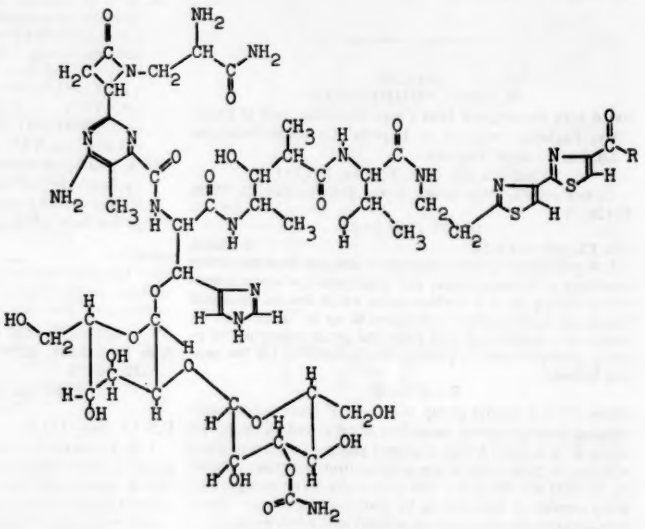
Hamao Umezawa; Kenji Maeda, both of Tokyo; Tomohisa Takita, Asaka; Yuya Nakayama, Yono; Akio Fujii, Tokyo; Nobuyoshi Shimada, Tokyo, and Hideo chimura, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenyu Kai, Tokyo, Japan

Continuation-in-part of Ser. No. 10,421, Feb. 11, 1970, abandoned. This application Sept. 21, 1972, Ser. No. 291,079

Int. Cl. C07c *103/52;* **A61k** *27/00;* **C07a** *7/00*

U.S. Cl. 260—112.5 **1 Claim**

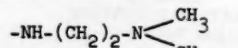
1. Bleomycins having a structure represented by the formula,

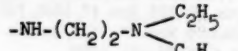


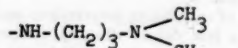
wherein

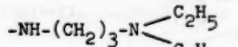
R = —NH—$(CH_2)_2$—NH_2

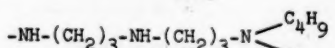
—NH—$(CH_2)_3$—NH_2

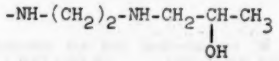


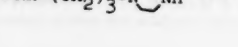


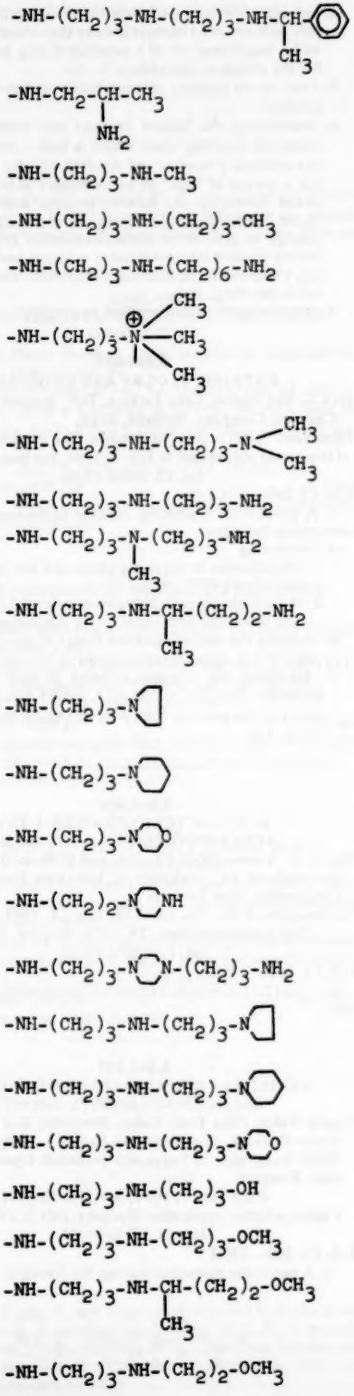


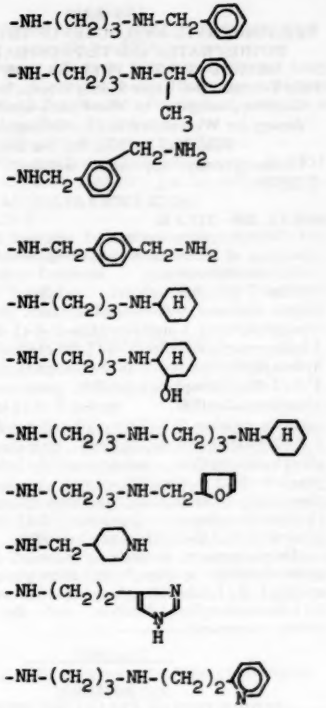












3,846,401

3'-O,5'-N-CYCLOPHOSPHATE NUCLEOSIDES

Akira Murayama, Gottingen; Hans Hettler, Weil am Rhein, and Bernd Jastorff, Rhumspringe, all of Germany, assignors to Max Planck-Gesellschaft zur Forderung Der Wissenschaften E.V., Munich, Germany

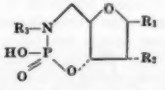
Filed July 1, 1971, Ser. No. 159,001

Claims priority, application Germany, July 1, 1970, 2032436

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **15 Claims**

1. A compound of the formula



wherein R_1 is pyrimidyl or purinyl attached by the ring nitrogen atom thereof at position 1 and 9, respectively, or a corresponding group substituted by at least one of halo, hydroxy, lower-alkyl, $-NH_2$, —NH-lower-alkyl and $-N(\text{lower-alkyl})_2$; R_2 is H, OH, alkoxy of one to 12 carbon atoms, or OH esterified with fatty acid of one to 18 carbon atoms, an alkylsulfonic acid of one to six carbon atoms, or an arylsulfonic acid of six to 10 carbon atoms; and R_3 is H or a hydrocarbon selected from the group consisting of alkyl, aryl, cycloalkyl, arylalkyl and cycloalkyl of up to ten carbon atoms, or a corresponding group substituted by hydroxy, alkoxy of one to four carbon atoms, amino, mercapto, alkylmercapto of one to four carbon atoms, carboxy carb-lower-alkoxy, guanidino, 3-indolyl or 4-imidazolyl; and the physiologically acceptable inorganic salts thereof.

3,846,402

THIOPHOSPHATE ANALOGUES OF THE NUCLEOSIDE DIPHOSPHATES AND TRIPHOSPHATES AND A METHOD FOR THE PREPARATION THEREOF

Fritz Eckstein, and Roger Sydney Goody, both of Gottingen, Germany, assignors to Max-Planch-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Filed May 2, 1972, Ser. No. 249,579

Claims priority, application Germany, May 6, 1971, 2122529

Int. Cl. C07d *51/52*, *51/54*

U.S. Cl. 260—211.5 R 10 Claims

1. Thiophosphate compound selected from the group consisting of adenosine-5′-0-(2-thiodiphosphate, guanosine-5′-0-(2-thiodiphosphate), inosine-5′-0-(thiodiphosphate), cytidine-5′-(thiodiphosphate), cytidine-5′-0-(2-thiodiphosphate), uridine-5′-0-(2-thiodiphosphate), thymidine-5′-0-(2-thiodiphosphate), 5-methylcytidine-5′-0-(2-thiodiphosphate), 5-hydroxymethylcytidine-5′-0-(2-thiodiphosphate), 5-hydroxymethylcytidine-5′-0-(2-thiodiphosphate), adenosine-5′-0-(2-thiodiphosphate)-disulfide, guanosine-5′-0-(2-thiodiphosphate)-disulfide, inosine-5′-0-(2-thiodiphosphate)-disulfide, cytidine-5′-0-(2-thiodiphosphate)-disulfide, uridine-5′-0-(2-thiodiphosphate)-disulfide, thymidine-5′-0-(2-thiodiphosphate)-disulfide, adenosine-5′-0-(3-thiotriphosphate), guanosine-5′-0-(3-thiotriphosphate), inosine-5′-0-(3-thiotriphosphate), cytidine-5′-0-(3-thiotriphosphate), uridine-5′-0-(3-thiotriphosphate), thymidine-5′-0-(3-thiotriphosphate), adenine-5′-0-(3-thiotriphosphate)-disulfide, guanosine-5′-0-(3-thiotriphosphate)-disulfide, inosine-5′-0-(3-thiotriphosphate)-disulfide, cytidine-5′-0-(3-thiotriphosphate)-disulfide, uridine-5′-0-(3-thiotriphosphate)-disulfide and thymidine-5′-0-(3-thiotriphosphate)-disulfide; and the corresponding desoxy compounds.

3,846,403

PRODUCTION OF CELLULOSE ESTERS FROM PARTIALLY PURIFIED WOOD PULP BY HEMICELLULOSE REMOVAL

Kelly B. Gibney, Burnaby, and Russell S. Evans, Vancouver, British Columbia, both of Canada, assignors to Canadian Cellulose Company, Limited, Vancouver, British Columbia, Canada

Filed June 21, 1973, Ser. No. 372,146

Int. Cl. C08b *3/06*

U.S. Cl. 260—227 7 Claims

1. In the production of a solution of a cellulose lower alkanoate wherein a cellulose source is subjected to esterification with a lower alkanoic acid anhydride in a lower alkanoic acid thereby to form said cellulose lower alkanoate dissolved in said acid, the improvement which comprises employing as said cellulose source cellulose having a hemicellulose content in excess of about 5 percent by weight, interrupting the esterification when the hemicellulose content of the still undissolved cellulose source has fallen to less than about one-half its initial value, filtering the reaction mass to remove therefrom the solution, adding fresh anhydride and acid to the filtration residue, and continuing the reaction, whereby the resulting solution is characterized by a performance during subsequent processing comparable to that of initially more pure cellulose sources.

3,846,404

PROCESS OF PREPARING GELLED CELLULOSE TRIACETATE PRODUCTS AND THE PRODUCTS PRODUCED THEREBY

Larry D. Nichols, Arlington, Mass., assignor to Moleculon Research Corporation, Cambridge, Mass.

Filed May 23, 1973, Ser. No. 363,267

Int. Cl. B01d *39/00*, *13/04*; C08b *3/06*

U.S. Cl. 260—230 61 Claims

1. A process of preparing a gelled cellulose triacetate product, which process comprises:

a. providing a polymer solution comprising cellulose triacetate with an acetyl content greater than about 42 percent, and a major amount of a nonhydrolyzing acidic solvent for the cellulose triacetate;

b. forming the polymer solution into a configuration of the product;

c. introducing the formed product into contact with an excess of a gelling liquid which is both a nonsolvent for the cellulose triacetate and miscible with the solvent used for a period of time, so as to replace substantially the entire solvent in the formed product with the gelling liquid, the replacement carried out at a temperature low enough to provide an ultramicroporous gelled product having distinct interpenetrating polymer and liquid phases, which in film or fiber form is flexible, transparent and self-supporting; and

d. recovering the gelled product so prepared.

3,846,405

CATIONIC FLOURS AND STARCHES

Jack C. McClendon, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 5, 1972, Ser. No. 286,846. The portion of the term of this patent subsequent to Apr. 3, 1990, has been disclaimed.

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R 9 Claims

1. A process for producing cationic farinaceous materials comprising the steps:

A. contacting

1. ethylenimine in the vapor phase at a temperature of at least about 40°C., with

2. at least one granular farinaceous material at a temperature below the dew point of the ethylenimine vapor;

B. warming the reaction mixture from (A) to a temperature sufficient to cause reaction between (1) and (2); and

C. acidifying the reaction product of step (B) with a Bronsted acid; the pH of an 8 weight percent aqueous slurry of the product from step (C) being from about pH 2.5 to 7.0.

3,846,406

6-[2-(1,4-CYCLOHEXADIEN-1-YL) ACETAMIDO]PENICILLANIC ACID

Harvey E. Alburn, West Chester, and William Dvonch, Radnor, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 843,739, July 22, 1969, abandoned. This application Sept. 24, 1970, Ser. No. 75,261

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 1 Claim

1. 6-[2-(1,4-cyclohexadien-1-yl)acetamido]penicillanic acid.

3,846,407

PENICILLIN DERIVATIVES CONTAINING A HALOGENO-CARBONYL GROUP

Magda Huhn; Geza Toth; Gabor Resofszki; Eva Somfai, and Gabor Horvath, all of Budapest, Hungary, assignors to CHINOIN Gyogyszer- es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

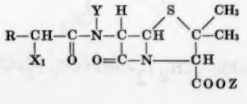
Filed July 1, 1971, Ser. No. 159,041

Claims priority, application Hungary, July 3, 1970, CI-1006

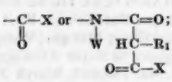
Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 6 Claims

1. A penicillin derivative having the formula:



where R is phenyl, bromophenyl or chlorophenyl; X_1 is



R_1 is phenyl, bromphenyl or chlorophenyl; X is bromine or chlorine; and W, Y, and Z are the same or different and are hydrogen or trimethylsilane, or the trimethylamine, triethylamine, N-alkylpiperidine or morpholine salt thereof.

3,846,408

2-BENZAZEPINYLALKYLAMINO-BENZAMIDE DERIVATIVES

Bola Vithal Shetty, Bombay, India, assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 108,618, Jan. 21, 1971, abandoned, which is a division of Ser. No. 691,955, Dec. 20, 1967, Pat. No. 3,635,976. This application Nov. 16, 1971, Ser. No. 199,368

Int. Cl. C07d *41/08, 57/02, 99/10*

U.S. Cl. 260—239 BB **1 Claim**

1. 2-(2-[3-(1,2,4,5-tetrahydro-3H,3-benzazepinyl)] ethylamino) benzamide.

3,846,409

10,11-METHANO 5H-DIBENZ [B,F] AZEPINES 5-PHENACYL DERIVATIVES

Michael Marx, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 126,920, March 22, 1971,. This application Dec. 7, 1971, Ser. No. 205,741

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 D **1 Claim**

1. A compound having the formula 10,11-difluoromethano-10,11-dihydro-5-(γ-(N-p-chlorophenacyl-N-methyl)-aminopropyl)-5H-dibenz(b,f)azepine.

3,846,410

3-SUBSTITUTED-7-HYDROXY LOWER ALKYL BENZODIAZEPINES

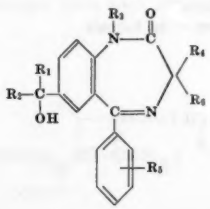
Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 10, 1971, Ser. No. 206,932The portion of the term of this patent subsequent to Aug. 8, 1989, has been disclaimed.

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **15 Claims**

1. A compound of the formula



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen and lower alkyl, R_5 is selected from the group consisting of hydrogen and halogen and R_6 is selected from the group consisting of lower alkanoyloxy and hydroxy.

3,846,411

CHOLERETICALLY ACTIVE ESTERS AND SALTS OF BILE ACIDS

Josef Olav Widauer, Allschwil, Switzerland; Konrad Lang, Bad Krozingen, Germany; Laszlo Baum, and Suzanne Szabo, both of La Tour-de-Peilz, Switzerland, assignors to Medichemie A.G., Basel, Switzerland

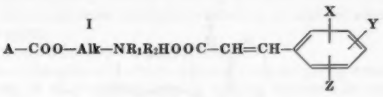
Filed July 17, 1972, Ser. No. 272,156

Claims priority, application Switzerland, Aug. 4, 1971, 11484/71; Sept. 28, 1971, 14085/71; Jan. 24, 1972, 1012/72

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.5 **5 Claims**

1. Cholereticallly active salts of basic bile acid esters and cinnamic acids of the general formula



in which A—COO— is the rest of a bile acid having the formula of a cholanic acid with hydroxyl or oxo substitutents in at least one of the 3,7 or 12 positions, the hydroxyl groups being at the same face of the steroid molecule; X, Y, and Z, which are identical or different, represent a hydrogen atom, a hydroxyl, a lower alkyl or a lower acyloxy group, or a halogen atom; Alk is an ethylene, propylene or isopropylene group, and R_1 and R_2, which are identical or different, represent a hydrogen atom or a lower alkyl group or together with the nitrogen atom form a piperazino, N-methyl piperazino or morpholino group.

3,846,412

DIHYDRO-2-AMINO-ISOQUINOLINES AND THEIR DERIVATIVES

Giangiacomo Nathansohn; Giorgio Winters, and Gianfranco Odasso, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

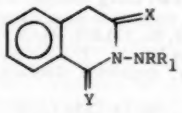
Continuation-in-part of Ser. No. 232,204, March 6, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,579

Claims priority, application Italy, Mar. 18, 1971, 21931/71

Int. Cl. C07d *33/52*

U.S. Cl. 260—240 G **10 Claims**

1. A compound represented by the formula



wherein X and Y are different and represent H_2 or oxygen; R and R_1 independently represent a member from the group consisting of hydrogen, lower alkyl, hydroxy-lower alkyl, amino-lower alkyl, mono- and di-lower alkylamino-lower alkyl, carboxy-lower alkyl, carboalkoxy-lower alkyl, cycloalkyl, lower alkenyl, cycloalkenyl, phenyl, substituted phenyl, phenyl lower alkyl, phenyl lower alkenyl, lower alkynyl; acyl derived from a lower alkyl, a phenyl or a heterocyclic carboxylic acid moiety; carbamyl, thiocarbamyl, phenylcarbamyl, phenylthiocarbamyl, guanyl, phenylsulfonyl, lower alkylsulfonyl or halo lower alkylsulfonyl; or, R and R_1 together with the adjacent nitrogen atom, represent a phenyl lower alkenylideneamino, phenyl lower alkylideneamino, substituted phenyl lower alkylideneamino, lower alkylideneamino, carboxy lower alkylideneamino, carbalkoxy lower alkylideneamino or cycloalkylideneamino group or form a heterocyclic ring therewith of the group consisting of 4-methyl-1-piperazino, morpholino, piperidino and pyrrolidino; and pharmaceutically acceptable addition salts thereof.

3,846,413

NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Colonge-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

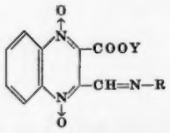
Division of Ser. No. 130,007, March 31, 1971,. This application , Ser. No. 359,277

Claims priority, application Germany, Apr. 2, 1970, 2015676

Int. Cl. C07d *51/78*

U.S. Cl. 260—240 G **4 Claims**

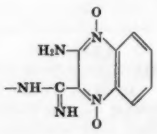
1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation $R^5—NH_3$; and

each of R and R^5 is



3,846,414

NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft

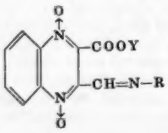
Division of Ser. No. 130,007, March 31, 1971,. This application May 11, 1973, Ser. No. 359,309

Claims priority, application Germany, Apr. 2, 1970, 2015676

Int. Cl. C07d *51/78*

U.S. Cl. 260—240 G **17 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation R^5-NH_3; and

each of R and R^5 is alkyl of 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, cyclopropyl, cyclopentyl, cyclohexyl, or norbornyl.

3,846,415

NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Eberfeld, all of Germany, assignors to Bayer Aktiengesellschaft

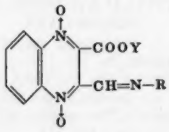
Division of Ser. No. 130,007, March 31, 1971,. This application May 11, 1973, Ser. No. 359,401

Claims priority, application Germany, Apr. 2, 1970, 2015667

Int. Cl. C07d *51/78*

U.S. Cl. 260—240 G **13 Claims**

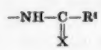
1. A compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation R^5-NH_3; and

each of R and R^5 is



wherein

X is O, S or NH and

R^4 is phenyl, pyridyl or norbornyl.

3,846,416

CEPHALOSPORIN COMPOUNDS

James Kennedy, Montrose, Scotland; Alan Gibson Long, Greenford, and William George Elphinstone Underwood, Stokes Poges, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

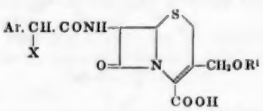
Division of Ser. No. 752,191, Aug. 13, 1968, Pat. No. 3,665,003. This application Dec. 28, 1971, Ser. No. 213,188

Claims priority, application Great Britain, Aug. 6, 1968, 38493/68

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula



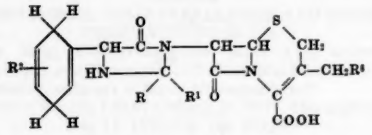
wherein Ar is phenyl, or phenyl substituted by halo, hydroxy, lower alkyl, nitro, amino, lower alkanoyl, lower alkoxy or lower alkylmercapto; X is hydroxy, formyloxy or lower alkanoyloxy and R^1 is lower alkyl or a non-toxic salt thereof.

3,846,417
1,4-CYCLOHEXADIENYL IMIDAZOLIDINYL CEPHALOSPORANIC ACIDS AND DERIVATIVES THEREOF

Manmohan Singh Atwal, Somerset; Daniel Jay Watts, Lawrenceville, and Frank Lee Weisenborn, Titusville, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed June 23, 1972, Ser. No. 265,874
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 8 Claims

1. The compounds of the formula



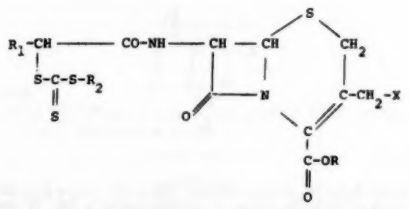
and pharmaceutically acceptable salts thereof; wherein R^3 is hydrogen, hydroxy or acetoxy; R and R^1 each is hydrogen, lower alkyl or taken together form a three to seven carbon ring; and R^2 is hydrogen or lower alkyl.

3,846,418
DITHIOCARBONYLTHIOACETYL CEPHALOSPORINS

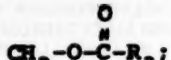
Uwe Treuner, Regensburg, and Hermann Breuer, Burgweinting, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 180,523, Sept. 14, 1971, abandoned. This application July 17, 1972, Ser. No. 272,228
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 8 Claims

1. A compound of the formula



wherein R is hydrogen, lower alkyl, alkali metal, trimethylsilyl or



R_1 is phenyl; R_2 is aluminum, alkali metal, alkaline earth metal, lower alkyl, C_5-C_6 cyclo-lower alkyl, phenyl or phenyl-lower alkyl, R_3 is lower alkyl, phenyl or phenyl-lower alkyl and X is hydrogen, hydroxy or lower alkanoyloxy.

3,846,419
4H-5,6-DIHYDRO-1,3-OXAZINES

Wolfgang Seeliger, and Karl-Dieter Hesse, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Continuation-in-part of Ser. No. 762,138, Sept. 24, 1968, abandoned. This application Feb. 15, 1972, Ser. No. 226,527
Claims priority, application Germany, Sept. 29, 1967, 43459
Int. Cl. C07d 87/20
U.S. Cl. 260—244 R 17 Claims

1. A process for the production of a 4H-5,6-dihydro-1,3-oxazine substituted in the 41position which comprises reacting in one stage a mixture comprising

a. an aldehyde selected from the group consisting of a saturated aliphatic aldehyde having at least 2 carbon atoms and an aromatic aldehyde containing no olefinic unsaturation;
b. an α-olefin of 3 – 9 carbon atoms;
c. a carboxylic acid amide selected from the group consisting of alkyl amides, alkenyl amides, monocyclic arylamides and cycloalkylamides; and
d. a strong, non-oxidizing acid,

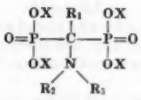
said reacting being conducted at a temperature between −10° and 50° until an oxaziine salt is formed.

3,846,420
PROCESS FOR THE PREPARATION OF 1-AMINOALKANE-1,-DIPHOSPHONIC ACIDS AND THEIR SALTS

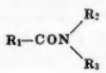
Klaus Wollmann; Walter Ploger, both of Hilden, and Karl-Heinz Worms, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Nov. 17, 1970, Ser. No. 90,454
Claims priority, application Germany, Nov. 19, 1969, 1958123
Int. Cl. C07d 87/28
U.S. Cl. 260—247 12 Claims

1. A process for the production of a compound of the formula



wherein R_1 is a member selected from the group consisting of hydrogen, lower alkyl and phenyl, R_2 and R_3 are members selected from the group consisting of hydrogen, alkyl having one to 22 carbon atoms, cycloalkyl having five to six carbon atoms, phenyl, alkylphenyl having seven to 18 carbon atoms, phenylalkyl having seven to 18 carbon atoms, and together with the nitrogen atom, piperidino, pyrrolidino and morpholino, and X is a member selected from the group consisting of hydrogen and alkali metal, with the proviso that at least one of R_1, R_2 and R_3 is other than hydrogen, which consists essentially in reacting a phosphorus trihalide selected from the group consisting of phosphorus trichloride and phosphorus tribromide with a monocarboxylic acid amide of the formula



wherein the molecular weight of said carboxylic acid amide is over 46 and R_1, R_2 and R_3 have the above-assigned meanings, at a temperature of from 0° to 75° C, subjecting the resultant reaction product to hydrolysis, and recovering said compound.

3,846,421
TRIAZOLOBENZODIAZEPINE DERIVATIVES

Kanji Meguro, and Yutaka Kuwada, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Higashii-ku, Osaka, Japan

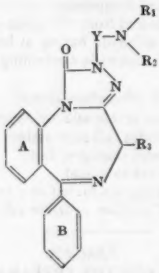
Filed Aug. 20, 1971, Ser. No. 173,634

Claims priority, application Japan, Sept. 26, 1970, 45-74749

Int. Cl. C07d *57/02, 99/02*

U.S. Cl. 260—247.2 A **15 Claims**

1. A member selected from the group consisting of (A) a compound of the formula



wherein Y represents alkylene having up to six carbons, R_1 represents hydrogen or lower alkyl, R_2 represents lower alkyl, or R_1 and R_2, together with the adjacent nitrogen, form a five or six membered ring selected from the group consisting of pyrrolidine, piperidine, morpholine, piperazine and N-lower alkyl piperazine, R_3 represents hydrogen or alkyl having up to six carbons and each of the rings A and B is unsubstituted or has one or more substituents selected from the group consisting of nitro, trifluoromethyl, halogen, lower alkyl and lower alkoxy, (B) a five-position N-oxide thereof and (C) a pharmaceutically acceptable acid salt thereof.

3,846,422
4,6-BIS(ALKARYL)-S-TRIAZINES

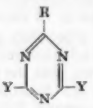
Raymond Seltzer, New City, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Giegy Corporation, Ardsley, N.Y.

Filed May 1, 1972, Ser. No. 248,839

Int. Cl. C07d *55/50, 55/18*

U.S. Cl. 260—248 CS **6 Claims**

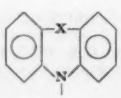
1. A 4,6-bis(alkaryl)-s-triazine compound having the formula



wherein

R is hydrogen, a straight or branched chain alkyl group having up to four carbon atoms, carboxyl, amino, phenyl, naphthyl, biphenyl or one of such aryl groups substituted with a lower alkyl group, halogen or a lower alkoxy group, diphenylamino, dinaphthylamino or a heterocyclic group selected from

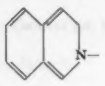
(a)



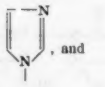
wherein X is oxygen, sulfur or a covalent bond,

(b)

(c)

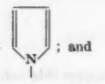


(d)



, and

(e)



; and

Y is a dialkyl substituted phenyl or naphthyl group where said alkyl groups having one to four carbon atoms.

3,846,423
PYRAZOLO (1,5A) 1,3,5-TRIAZINES

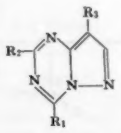
Joze Kobe, Costa Mesa; Robert H. Springer, Santa Ana, and Darrell E. O'Brien, Mission Viejo, all of Calif., assignors to ICN Pharmaceuticals, Inc., Pasadena, Calif.

Filed June 8, 1972, Ser. No. 260,850

Int. Cl. C07d *57/34*

U.S. Cl. 260—248 NS **19 Claims**

1. A compound of the structure:



wherein R_1 is OH, alkoxy, halogen, SH or SR_4 where R_4 is alkyl or aralkyl, N=N=N, amine or alkylamine, R_2 is SR_4, H, alkyl or amine, and R_3 is H or halogen, said alkyl and aralkyl being C_1 to C_8 linear or branched alkyl or aralkyl and the aryl portion of said aralkyl is phenyl; provided that when R_3 is H and R_1 is OH, R_2 is not SH.

3,846,424
RECOVERY OF CHLORINE AND CYANURIC ACID VALUES FROM POLYCHLOROISOCYANURIC ACID AND SALTS THEREOF

Louis C. Hirdler, Lake Charles, La.; Henry W. Schiessl, Northford, and David F. Doonan, both of Guilford, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 22, 1973, Ser. No. 362,695

Int. Cl. C07d *55/36*

U.S. Cl. 260—248 A **26 Claims**

1. A process for the recovery of chlorine and cyanuric acid values from an aqueous solution containing a chlorinated s-triazine compound selected from the group consisting of polychloroisocyanuric acids, alkali metal salts of poly-

chloroisocyanuric acids and mixtures thereof which comprises reacting said aqueous solution with a mineral acid to evolve gaseous chlorine and form an aqueous slurry containing solid cyanuric acid, recovering said gaseous chlorine, reacting said aqueous slurry containing solid cyanuric acid with an alkali metal compound selected from the group consisting of hydroxide and carbonate to form an aqueous slurry containing solid alkali metal cyanurate in an aqueous solution containing dissolved alkali metal cyanurate and separating said solid alkali metal cyanurate from said slurry.

3,846,425
NEW IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Colonge-Buchheim; Kurt Ley, Odenthal-GloBusch, and Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft

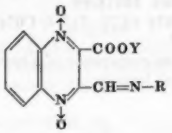
Division of Ser. No. 130,007, March 31, 1971. This application May 11, 1973, Ser. No. 359,279

Claims priority, application Germany, Apr. 2, 1970, 2015675

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 QN **14 Claims**

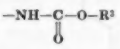
1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation $R^5-{}^+NH_3$; and

each of R and R^5 is



wherein

R^3 is alkyl of one to four carbon atoms or hydroxyalkyl of one to four carbon atoms.

3,846,426
6-AMINO-9-(SUBSTITUTED BENZYL) PURINES AND THEIR N OXIDES

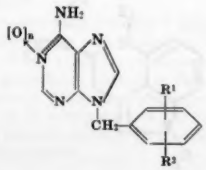
Emil P. Lira, Des Plaines; Walter M. Barker, Mundelein, and Robert C. McCrae, Lake Zurich, all of Ill., assignors to International Minerals & Chemical Corporation, Libertyville, Ill.

Continuation-in-part of Ser. No. 120,781, March 3, 1971, abandoned. This application Feb. 4, 1972, Ser. No. 219,848

Int. Cl. C07d *57/64*

U.S. Cl. 260—252 **27 Claims**

1. A compound of the structural formula:



wherein n is 0 or 1, and one of R^1 and R^2 is hydrogen with the other being a halogen selected from the group consisting of chlorine, bromine and iodine.

3,846,427
1-(PHTHALIMIDO-ALKYL)-1,2,3,4-TETRAHYDROQUINAZOLINONES AND ANALOGUES THEREOF

Bola Vithal Shetty, Bombay, India, assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 108,619, Jan. 21, 1971, abandoned, which is a division of Ser. No. 691,955, Dec. 20, 1967, Pat. No. 3,635,976. This application Nov. 16, 1971, Ser. No. 199,366

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q **1 Claim**

1. 2-phenyl-1-(2-phthalimido-ethyl)-1,2,3,4-tetrahydro-4-quinazolin-one.

3,846,428
NITROFURYLPYRIMIDINES

Rudolf Albrecht; Hans-Joachim Kessler, and Eberhard Schroder, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

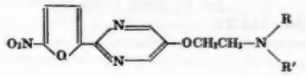
Filed Mar. 16, 1972, Ser. No. 235,426

Claims priority, application Germany, Mar. 17, 1971, 2113529

Int. Cl. C07d *51/36*

U.S. Cl. 260—256.4 C **28 Claims**

1. A compound of the formula



wherein R is alkyl of 1–6 carbon atoms, cycloalkyl of 3–7 carbon atoms, alkyl of 1–6 carbon atoms wherein 1–2 carbon atoms thereof are substituted by hydroxy or by alkanoyloxy of 1–6 carbon atoms or 1 carbon atom thereof is substituted by alkoxy of 1–6 carbon atoms or by dialkylamino wherein each alkyl group contains 1–6 carbon atoms or by tetrahydrofuryl or phenyl, and R′ is alkanoyl of 1–6 carbon atoms and the physiologically acceptable acid addition salts thereof.

3,846,429
METHOD OF PRODUCING 5-FLUOROURACIL

Solomon Aronovich Giller, ulitsa Pernavas, I0, kv. 76, Riga; Arvid Avgustovich Lazdinsh, ulitsa Mendeleeva, I, kv. 31, Olaine Latviiskoi; Artur Karlovich Veinberg, ulitsa Ludzas, 2.; Dagnia Yanovna Sniker, ulitsa Tserinju, 42, kv. 12, both of Jurmala Latviiskoi; Ivan Ljudvigovich Knunyants, Kotelnicheskaya naberezhnaya, 1/15, kv. 336, Moscow; Lev Solomonovich German, B. Serpukhovskaya ulitsa, 31, korpus 9, kv. 303, Moscow, and Natalya Borisovna Kazmina, ulitsa Krasnogo Mayaka, 8, korpus 2, kv. 41, Moscow, all of U.S.S.R.

Filed Sept. 22, 1971, Ser. No. 182,840

Int. Cl. C07d *51/30*

U.S. Cl. 260—260 **5 Claims**

1. A method of producing 5-fluorouracil comprising the steps of fluorinating uracil with elementary fluorine diluted with an inert gas in a glacial acetic acid medium under hydrodynamic conditions of Re = 35,000–45,000 at a temperature of from 15° to 35°C until the uracil disappears from the reaction mixture, heating said mixture at a temperature of from 90° to 95°C until 5-fluoro-6-acetoxy-dihydrouracil formed during the fluorination disappears therefrom and isolating the desired product.

3,846,430

1-(2-METHOXY-PHENYL)-4-[2-(4-FLUORO-BENZAMIDO)-ETHYL]-PIPERAZINE

Jacques de Antoni, Essonne, and Raymonde Eche, Paris, both of France, assignors to Les Laboratories Bruneau et Cie, Paris, France

Continuation of Ser. No. 888,087, Dec. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 733,754, June 3, 1968, abandoned. This application July 31, 1972, Ser. No. 278,602

Claims priority, application France, Jan. 12, 1968, 68.135764; Apr. 11, 1968, 68.147794

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PH **1 Claim**

1. The substituted benzoic acid amide which is 1-(2-methoxy-phenyl)-4-[2-(4-fluoro-benzamido)-ethyl]-piperazine.

3,846,431

HETEROCYCLICALLY DIBENZO(A,D)CYCLOHEPTA(1,4)DIEN-5-ONE DERIVATIVES

Albrecht Edenhofer, Riehen, assignor to Hans Spiegelberg, Basel, both of, Switzerland and Hoffman-La Roche, Inc., Nutley, N.J.

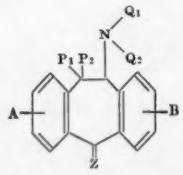
Division of Ser. No. 114,718, Feb. 11, 1971, Pat. No. 3,705,168, which is a division of Ser. No. 838,317, July 1, 1969, Pat. No. 3,586,718, which is a division of Ser. No. 517,893, Jan. 3, 1966, Pat. No. 3,478,048. This application Aug. 25, 1972, Ser. No. 283,877

Claims priority, application Switzerland, Jan. 8, 1965, 232/65; Jan. 14, 1965, 525/65

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **2 Claims**

1. A compound of the formula



wherein A and B each is, individually, hydrogen, halogen, lower alkyl of 1 to 7 carbon atoms, lower alkoxy of 1 to 7 carbon atoms, trifluoromethyl, lower alkylmercapto of 1 to 7 carbon atoms, lower alkanoyl of 1 to 7 carbon atoms, sulfamoyl, lower alkylsulfamoyl of 1 to 7 carbon atoms of lower alkylsulfonyl of 1 to 7 carbon atoms; Z is oxo; P_1 is hydroxyl when P_2 is hydrogen, or together with P_2 is oxo; Q_1 and Q_2, taken together with the nitrogen atom, is piperazino or lower alkyl piperazino wherein lower alkyl is of 1 to 7 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

3,846,432

DERIVATIVES OF 1,2,3,4-TETRAHYDROISOQUINOLINE

Kunihiko Tanaka, Toyonaka; Teiji Kishimoto, Kawani, and Hisanao Zenno, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

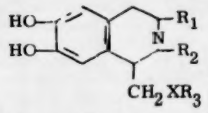
Filed Dec. 20, 1971, Ser. No. 210,213

Claims priority, application Japan, Dec. 29, 1970, 45-127198; Dec. 29, 1970, 45-127199; Dec. 29, 1970, 45-127200; Dec. 29, 1970, 45-127202; Dec. 29, 1970, 45-127201

Int. Cl. C07d *35/10*

U.S. Cl. 260—283 S **39 Claims**

1. A 1,2,3,4-tetrahydroisoquinoline having the formula:



wherein R_1 and R_2 are each a hydrogen or lower alkyl having 1 to 2 carbon atoms, X is an oxygen or sulfur atom, and R_3 is phenyl having substituted thereon a substituent selected from the group consisting of lower alkoxy, hydroxy, amaino, nitro, trifluoromethyl, trichloromethyl, tribomomethyl and halogen, or is phenyl having thereon two identical halogen substituents, a halogen and a lower alkyl substituent, or two lower alkoxy substituents, or is phenyl having thereof three lower alkoxy substituents, and pharmaceutically acceptable satls thereof, wherein "lower" refers to 1 to 6 carbon atoms.

3,846,433

PROCESS FOR PREPARING ERGOT ALKALOIDS

Paul Stadler, Biel-Benken/BL; Peter Stutz, Basel, and Stephan Guttmann, Allschwill, all of Switzerland, assignors to Sandoz Ltd. (aka Sandoz AG), Basel, Switzerland

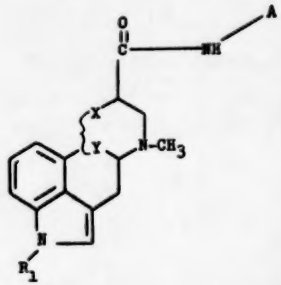
Continuation-in-part of Ser. No. 33,526, April 30, 1970, abandoned. This application July 19, 1972, Ser. No. 273,113

Claims priority, application Switzerland, May 6, 1969, 6912/69; July 2, 1969, 10118/69

Int. Cl. C07d *43/20, 51/64*; **C07c** *103/52*

U.S. Cl. 260—285.5 **14 Claims**

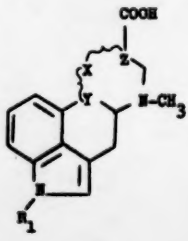
1. A process for the preparation of a lysergic acid polypeptide compound of the formula



wherein x y is the group

R_1 is hydrogen, lower alkyl, allyl, or benzyl, and -NH-A is a polypeptide with cyclic structure known in ergot peptide alkaloids, which comprises the steps:

a. reacting in an inert solvent a lysergic acid compound of the formula:



where R_1 is as defined above, and z x y is the group

with trifluoroacetic anhydride and

b. reacting the resulting mixed anhydride in inert solvent with a salt of an amine of the formula

H—NH—A

wherein —NH—A is as defined above, in the presence of a tertiary organic base which liberates the amine base from the amine salt, each stage of the reaction being carried out at a temperature of between −20° and −10°C,

the improvement which comprises carrying out step a) in the presence of 1 to 5 moles of trifluoroacetic acid per mole of lysergic acid compound to dissolve the lysergic acid compound in the inert solvent.

3,846,434

PROCESS FOR OBTAINING A GERMINE ADDUCT FROM GERMINE VALUES

Solomon Morris Kupchan, Ednam Forei, Charlottesville, Va. 22901

Continuation-in-part of Ser. No. 771,303, Oct. 28, 1968, abandoned. This application Feb. 16, 1970, Ser. No. 11,776

Int. Cl. C07d *39/00*

U.S. Cl. 260—287 R **13 Claims**

1. The process for obtaining a germine adduct from germine values which comprises:

a. treating germine values substantially free of protoveratrine with a basic hydrolyzing system, and

b. treating under substantially lower alkanol-free conditions the hydrolyzate thereby obtained with a liquid water-immiscible halogenated hydrocarbon in the presence of water, thereby to obtain a solid adduct of germine and said halogenated hydrocarbon, wherein the basic hydrolyzing system comprises an alkali metal hydroxide or an alkali metal alkoxide in a lower alkanol having 1 to 4 carbon atoms or water or mixtures thereof, and the halogenated hydrocarbon is selected from chlorinated aliphatic hydrocarbons.

3,846,435

PROCESS FOR THE PRODUCTION OF 2-METHYL-5-ETHYL PYRIDINE

Carlos B. Rosas, Rahway; Joseph A. Wantuck, Woodbridge, and Arnold Kaufman, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 21, 1972, Ser. No. 274,020

Int. Cl. C07d *31/08*

U.S. Cl. 260—290 P **4 Claims**

1. A process for preparing 2-methyl-5-ethyl pyridine which comprises reacting 1 mole of acetaldehyde with an aqueous solution of from 0.5 to 3.0 moles of ammonium acetate, ammonium dibasic phosphate, ammonium fluoride, ammonium bifluoride, ammonium benzoate, ammonium borate, or ammonium sulfide at a temperature in the range of 180° to 270°C. and at a pressure sufficient to maintain the reaction mixture in the liquid phase.

3,846,436

PIPERIDINOETHYL AND PIPERIDINOETHOXYETHYL ESTERS OF 2,2-DIARYL-CYCLOPROPANE-CARBOXYLIC ACIDS

Jean-Claude Cognacq, Bourg-la-Reine, France, assignor to Societe anonyme dite: Hexachimie, Rueil-Malmaison, France

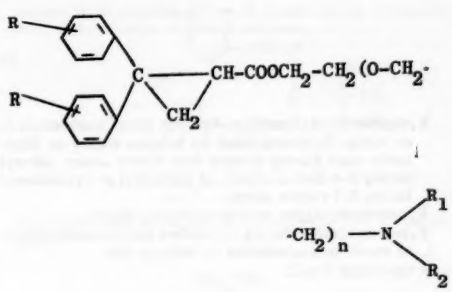
Filed Dec. 30, 1971, Ser. No. 214,473

Claims priority, application Great Britain, Dec. 31, 1970, 62024/70

Int. Cl. C07d *29/24*

U.S. Cl. 260—293.82 **6 Claims**

1. An ester of a 2,2-diphenyl cyclopropane-carboxylic acid having the formula:



in which R is hydrogen, halogen, lower alkyl, or lower alkoxy, *n* is zero or 1, and R_1 and R_2 together with the nitrogen atom to which they are attached, form piperidino or lower alkyl-substituted piperidino or a pharmaceutically acceptable salt thereof.

3,846,437

SULFUR DERIVATIVES OF PYRAZOLO(3,4-B)PYRIDINES

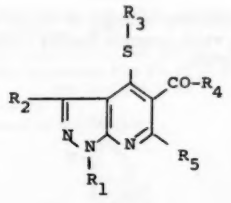
Hans Hoehn, Tegernheim, and Theodor Denzel, Nurnberg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 220,373, Jan. 24, 1972, Pat. No. 3,773,778. This application Aug. 14, 1973, Ser. No. 388,283

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **7 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or lower alkyl,

R_2 is hydrogen or methyl, R_3 is imidazolyl or lower alkyl-imidazolyl,

R_4 is hydroxy or lower alkoxy, R_5 is hydrogen or methyl, and physiologically acceptable acid addition salts thereof.

3,846,438
CERTAIN 1,2,4-THIADIAZOLES

Jorg Bader, deceased, late of Arlesheim, Switzerland (by Dagmar Bader-Ludwig, legal representative); Heinz Hambock, Binningen, Switzerland; Elmar Sturm, and Anton Georg Weiss, both of Benken/Bl, Switzerland, assignors to Ciba-Giegy Corporation, Ardsley, N.Y.

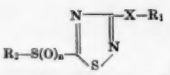
Filed Aug. 28, 1972, Ser. No. 284,198

Claims priority, application Switzerland, Aug. 31, 1971, 12796/71; Aug. 15, 1972, 12053/72

Int. Cl. C07d *91/60*

U.S. Cl. 260—302 SD **6 Claims**

1. A thiadiazole derivative of the formula



(I)

R_1 represents alkyl having 1–4 carbon atoms, unsubstituted, or mono- to trisubstituted by halogen alkoxy or alkylamino each having at most four carbon atoms, alkenyl having 2–4 carbon atoms, or cycloalkyl or cycloalkenyl having 3–7 carbon atoms,

X represents oxygen, sulphur or methyl-imino,

R_2 represents alkyl having 1–4 carbon atoms, unsubstituted, or mono- to disubstituted by halogen, and

n represents 1 or 2.

3,846,439
PROCESS FOR THE PREPARATION OF 3-PHENYL-5-T-UTYL-2-OXADIAZOLONES

Roger Boesch, Vitry sur Seine, and Andre Blind, Villeurbanne, both of France, assignors to Rhone-Poulenc S.A., Paris, France

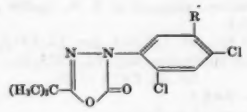
Filed Aug. 5, 1970, Ser. No. 61,461

Claims priority, application France, Apr. 6, 1970, 70.12389The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

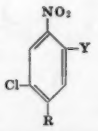
Int. Cl. C07d *85/54*

U.S. Cl. 260—307 A **9 Claims**

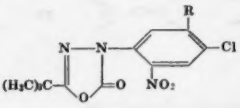
1. Process for the preparation of 3-(2,4-dichlorophenyl)-5-t-butyl-1,3,4-oxadiazol-2-ones of the formula:



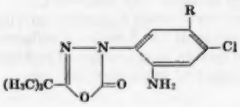
in which R represents hydrogen or alkoxy of one to four carbon atoms, which comprises reacting a halogenonitrobenzene of the formula:



in which Y represents halogen and R is as hereinbefore defined, with an alkali metal salt of 5-t-butyl-1,3,4-oxadiazol-2-one in an aprotic solvent selected from the group consisting of dimethylformamide, dimethylacetamide, hexamethylphosphotriamide, dimethylsulphoxide and N-methyl pyrrolid-2-one, reducing the nitro group in the resulting product of the formula:



in which R is as hereinbefore defined, to a primary amino group, diazotizing the amino group in the oxadiazolone derivative thus obtained of the formula:



in which R is as hereinbefore defined, and reacting the resulting diazonium compound with cuprous chloride to replace the dizaonium grouping by a chlorine atom.

3,846,440
PROCESS FOR THE PREPARATION OF 3-PHENYL-5-T-UTYL-2-OXADIAZOLONES

Roger Boesch, Vitry sur Seine; Andre Blind, Villeurbanne, and Jean-Marie Cassal, Saint-Louis, all of France

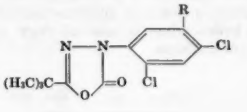
Filed Aug. 5, 1970, Ser. No. 61,487

Claims priority, application France, Aug. 7, 1969, 69.27227The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

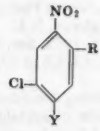
Int. Cl. C07d *85/54*

U.S. Cl. 260—307 A **9 Claims**

1. Process for the preparation of 3-(2,4-dichlorophenyl)-5-t-butyl-1,3,4-oxadiazol-2-ones of the formula:

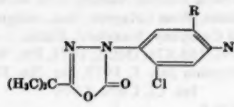


in which R represents hydrogen or alkoxy of one to four carbon atoms, which comprises reacting a halogenonitrobenzene of the formula:

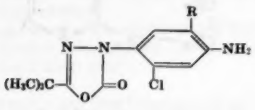


in which Y represents halogen and R is as hereinbefore defined, with an alkali metal salt of 5-t-butyl-1,3,4-oxadiazol-2-one in an aprotic solvent selected from the group consisting of dimethylformamide, dimethylacetamide, hexamethylphos-

photriamide, dimethylsulphoxide and N-methyl pyrrolid-2-one, reducing the nitro group in the resulting product of the formula:



in which R is as hereinbefore defined, to a primary amino group, diazotizing the amino group in the oxadiazolone derivative thus obtained of the formula:



in which R is as hereinbefore defined, and reacting the resulting diazonium compound with cuprous chloride to replace the diazonium grouping by a chlorine atom.

3,846,441

1,5-DISUBSTITUTED-3-SUBSTITUTED PHENYL HYDANTOINS

Akihiko Mine, Toyonaka; Akira Fujinami, Ashiya; Nobuyuki Kameda, Takarazuka; Naganori Hino, Toyonaka; Takeo Satomi, Takarazuka, and Kohshi Tateishi, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

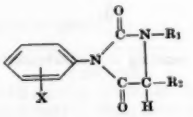
Filed Nov. 29, 1971, Ser. No. 203,003

Claims priority, application Japan, Dec. 9, 1970, 45-109772

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **4 Claims**

1. A hydantoin derivative having the formula



wherein X is nitro, cyano, lower alkoxy or lower alkoxycarbonyl, and R_1 and R_2 each are lower alkyl.

3,846,442

GLYCIDYL HYDANTOIN COMPOUNDS

Juergen Habermeier, Pfeffingen, and Daniel Porret, Binningen, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

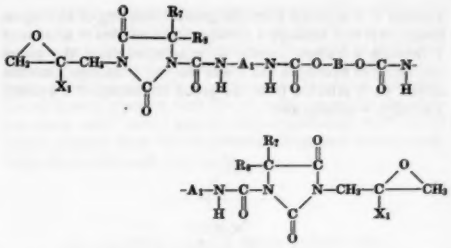
Filed Nov. 15, 1971, Ser. No. 198,989

Claims priority, application Switzerland, Nov. 17, 1970, 16964/70

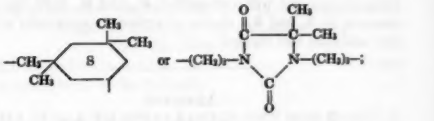
Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **7 Claims**

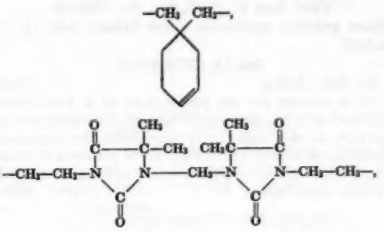
1. A compound of the formula



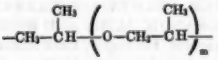
wherein A_1 is alkylene of 2 to 10 carbon atoms, cyclopentylene, cyclohexylene, tolylene, phenylene,



X_1 is hydrogen or methyl; B is alkylene of 2 to 12 carbon atoms,



or



wherein *m* is an interger corresponding to an average molecular weight of 250 to 2,500 for the group;

R_7 and R_8 is hydrogen orr alkyl of 1 to 4 carbon atoms or R_7 and R_8 together is tetramethylene or pentamethylene.

3,846,443

1H-IMIDAZO[1,2A][1,4]BENAO-DIAZEPINE-1,2(3H)-DIONES

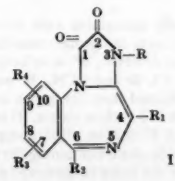
Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 195,049, Nov. 2, 1971, abandoned. This application May 29, 1973, Ser. No. 364,616

Int. Cl. C07d *57/02*

U.S. Cl. 260—309.7 **6 Claims**

1. A compound of the formula



I

wherein R is selected from the group consisting of hydrogen, lower alkyl of 1 through 4 carbon atoms and lower alkenyl of 3 through 4 carbon atoms; R_1 is selected from the group consisting of hydrogen and lower alkyl of 1 through 3 carbon atoms; R_2 is selected from the group consisting of 2-pyridyl, 3-pyridyl, 4-pyridyl and

wherein R_5 and R_6 are selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, halogen, nitro, cyano and trifluoromethyl; R_3 and R_4 have the same meaning as R_5 and R_6, above; or a pharmacologically acceptable addition salt thereof.

3,846,444

METHOD FOR THE PREPARATION OF 3-ACYLAMINO--PYRAZOLIN-5-ONES

Marcel Jacob Monbaliu, Mortsel, and Raphael Karel Van Poucke, Berchem, both of Belgium, assignors to Gevaert-Agfa, N.V., Mortsel, Belgium

Filed June 19, 1969, Ser. No. 834,858

Claims priority, application Great Britain, July 18, 1968, 34342/68

Int. Cl. C07d *49/14*

U.S. Cl. 260—310 A **7 Claims**

1. In a process for the preparation of a 3-acylamino-2-pyrazolin-5-one by allowing a 3-amino-2-pyrazolin-5-one to react with an acid chloride or anhydride, the improvement wherein the reaction is carried out in the presence of a heterocyclic nitrogen-containing basic condensing agent and a Friedel Crafts metal halide.

3,846,445

DIBENZOFURANYLOXY AND CARBAZOLYLOYX ALKANOIC ACIDS AND ESTERS

Ulf Goran Bondesson, Orrvagen; Lars Anders Fritz Carlson, Stora Malmagatan; Christina Hedbom, Karlslundsgatan; Harry Olof Magnusson, Satterstavagen, and Nils Erik Stjernstrom, Tappgatan, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

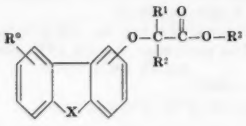
Filed Sept. 25, 1972, Ser. No. 292,138

Claims priority, application Sweden, Sept. 23, 1971, 12075/71

Int. Cl. C07d *27/68*

U.S. Cl. 260—315 **22 Claims**

1. A compound selected from the group consisting of compounds of the formula



and pharmaceutically acceptable salts thereof, in which formula X is selected from the group consisting of the bivalent radicals —O— and —NH—; R^6 is selected from the group consisting of H, F. Cl, Br and OCH_3; R^1 and R^2 are the same or different and selected from the group consisting of H and an alkyl group with 1–3 carbon atoms; R^3 is selected from the group consisting of H and an alkyl group with 1–3 carbon atoms; R^6 and the side chain containing the radicals R^1, R^2 and R^3 being placed on the same or different benzene ring.

3,846,446

SUBSTITUTED HETEROCYCLIC DERIVATIVES OF AZEPINE

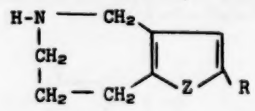
Martin Joseph Weiss, Oradell, N.J.; Gabriel Joseph Gibs, Pearl River; John Frank Poletto, Nanuet, both of N.Y., and William Alan Remers, West Lafayette, Ind., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 185,876, Oct. 1, 1971, Pat. No. 3,758,501. This application July 5, 1973, Ser. No. 376,776

Int. Cl. C07d *27/00*

U.S. Cl. 260—326.9 **7 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein Z is a divalent moiety selected from the group consisting of oxa, thia and imino, and R is selected from the group consisting of hydrogen and an alkyl group having up to four carbon atoms; and the pharmacologically acceptable acid-addition salts thereof.

3,846,447

PREPARATION OF 5-AROYL-PYRROLES AND INTERMEDIATES THEREFOR

John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Inc., Ft. Washington, Pa.

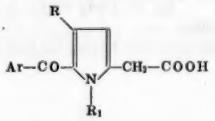
Filed Aug. 3, 1972, Ser. No. 277,845

Int. Cl. C07d *27/26*

U.S. Cl. 260—326.47 **15 Claims**

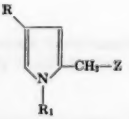
1. A process of preparing a 5-aroyl-pyrrole-2-alkanoic acid of the formula:

(1)



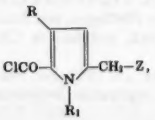
which comprises reacting a 5-unsubstituted pyrrole of the formula:

(2)



with phosgene in an aprotic solvent in order to prepare a 5-chlorocarbonyl pyrrole of the formula:

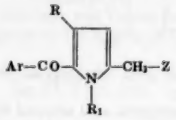
(3)



treating the latter with a member selected from the group consisting of (i) an aryl transition metal compound of the

formula: $(Ar)_nM$, and (ii) an aryl Grignard reagent of the formula: ArMgBr, in the presence of a catalytic amount of a transition metal halide selected from the group consisting of $ZnCl_2$, $CdCl_2$, $FeCl_3$, $CoCl_3$ and $(CuBr)_2$, in order to transform said 5-chlorocarbonyl function into a 5-Ar-CO function, and hydrolyzing to the acid stage the thus-obtained 5-Ar-CO-pyrrole of the formula:

(4)



to yield the desired 5-aroyl-pyrrole-2-alkanoic acid, wherein the following meanings are assigned to the foregoing symbols: M is a transition metal selected from the group consisting of copper, zinc and cadmium;

n is an integer equal to the valence of said transition metal;

R is a member selected from the group consisting of hydrogen and lower alkyl;

R_1 is lower alkyl;

Z is a member selected from the group consisting of CN and COO(lower alkyl); and

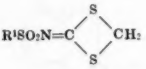
Ar is a member selected from the group consisting of phenyl and mono-, di- and tri-substituted phenyl wherein each substituent is selected from the group consisting of halo, lower alkyl, lower alkoxy, trifluoromethyl and methylthio; provided that, when said R is lower alkyl, then said Z is COO—(lower alkyl).

3,846,448
1,3-DITHIETANES

Stanley A. Greenfield, Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 100,297, Dec. 21, 1970, Pat. No. 3,772,331. This application Oct. 25, 1972, Ser. No. 300,686
Int. Cl. C07d *69/00*
U.S. Cl. 260—327 M **3 Claims**

1. A compound of the structure



wherein

R^1 is alkyl of 1 to 12 carbon.

3,846,449
N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne; Robert R. Mod; Gene Sumrell, all of New Orleans, La., and Winfred E. Parker, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 176,734, Aug. 31, 1971, Pat. No. 3,746,644. This application Apr. 6, 1973, Ser. No. 348,823
Int. Cl. C07d *59/00*
U.S. Cl. 260—327 E **3 Claims**

1. The compound N,N-dibutyl-9,10-epithiostearamide.

3,846,450
PURIFICATION OF OXYGENATED ORGANIC COMPOUNDS

Gerald C. Stalker, Bay City, and Roscoe L. Pearce, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 8, 1972, Ser. No. 287,801
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.2 **7 Claims**

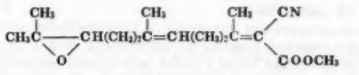
1. A method of removing lower alkylene glycol impurities from oxygenated organic compounds comprising contacting a contaminated oxygenated compound selected from the group consisting of methylphenol ether, diethylcarbonate, butyrolactone and 4-methyl-1,3-dioxolan-2-one with a sufficient amount of a halide of an alkaline earth metal selected from the group consisting of calcium, magnesium, strontium, and barium to form a complex with the impurity; removing the alkaline earth metal halide and the impurityalkaline earth metal halide complex from the oxygenated compound thereby purifying the oxygenated compound.

3,846,451
ARTHROPOD MATURATION INHIBITORS

Meyer Schwarz, Kensington; Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 104,781, Jan. 7, 1971,. This application Apr. 6, 1973, Ser. No. 348,553
Int. Cl. C07d *1/24*
U.S. Cl. 260—348 A **1 Claim**

1. A compound of the formula

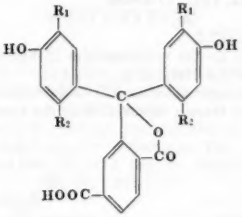


3,846,452
CARBOXYL-PHTHALEINS

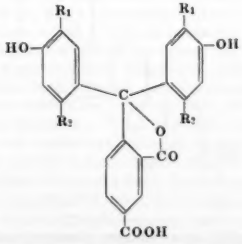
Shojiro Horiguchi, Tokyo; Michiei Nakamura, Soka; Keiji Nakajima, Urawa, and Minoru Takizawa, Tokyo, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed June 28, 1972, Ser. No. 267,079
Claims priority, application Japan, June 28, 1971, 46-46288
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.4 **2 Claims**

1. A pH indicator having the formula:



or



wherein R_1 and R_2 each represent methyl, ethyl, or propyl.

3,846,453
SPHEROIDAL SHAPED PARTICLES OF AMINORESIN-SILICA POLYMERIC COMPOSITE

Modesto Erneta, Princeton Junction, N.J., assignor to N L Industries, Inc., New York, N.Y.

Filed May 7, 1973, Ser. No. 358,046
Int. Cl. C08g 51/04
U.S. Cl. 260—39 SB 11 Claims

1. A composition of matter comprising spheroidal shaped clusters of aminoresin-silica polymeric composite particles having an individual particle size range from 0.05 to 0.3 μ, said particles formed into spheroidal shaped clusters of size from 1 to 10 μ, said composition containing from 0.5 to 30 percent silica by weight, the remainder being the aminoresin.

3,846,454
PROCESS FOR PREPARING 2,3,6-TRIMETHYLBENZOQUINONE

Hajime Ohnishi, and Yuji Nakazawa, both of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Sept. 13, 1973, Ser. No. 396,827
Int. Cl. C07c 49/64
U.S. Cl. 260—396 R 7 Claims

1. A process for preparing 2,3,6-trimethylbenzoquinone which comprises reacting pseudocumene with a peracid of pKa of more than 7.0 at a molar ratio of pseudocumene/peracid of 1/1 to 10, in the presence of from 1 to 150 percent by weight, based on the weight of pseudocumene, of an acid catalyst selected from the group consisting of strong acids of pKa of less than 3.0 and Lewis acids, at a temperature of from zero to 100°C.

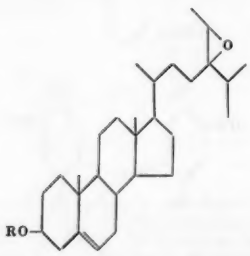
3,846,455
PROCESS FOR THE PREPARATION OF 25-HYDROXY-CHOLESTEROL AND ESTERS THEREOF

Nobuo Ikekawa, and Masuo Morisaki, both of Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed May 21, 1973, Ser. No. 362,506
Claims priority, application Japan, May 22, 1972, 47-49879; May 22, 1972, 47-49880
Int. Cl. C07c 169/54
U.S. Cl. 260—397.2 1 Claim

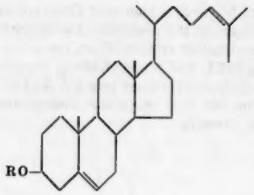
1. A process for the preparation of 25-hydroxycholesterol or an ester thereof comprising:

1. reacting stannic chloride with fucosterol-24(28)-epoxide or an ester thereof represented by the formula



(I)

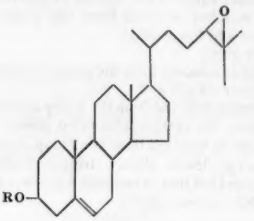
wherein R designates a hydrogen atom or an acetyl radical to obtain desmosterol or an ester thereof represented by the formula



II

wherein R has the same meanings as those defined in the above formula (I);

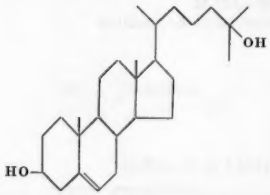
2. reacting a perorganic acid selected from the group consisting of perbenzoic acid, m-chloro perbenzoic acid and mono-perphthalic acid with the desmosterol or ester thereof of the formula (II) to obtain desmosterol-24(25)-epoxide having the formula



III

wherein R has the same meanings as given in formula (I); and

3. reacting an alkali metal hydride complex selected from the group consisting of lithiu- aluminum hydride and sodium (bis-2-methoxy-ethoxy) aluminum hydride with the desmosterol-24(25)-epoxide having the formula (III) to obtain 25-hydroxycholesterol represented by the formula



IV

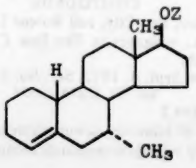
and, if necessary, further treating the 25-hydroxycholesterol with acetic anhydride to obtain the corresponding ester thereof.

3,846,456
ORGANIC COMPOUNDS

J. Allan Campbell, and John C. Babcock, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 7, 1965, Ser. No. 446,395
Int. Cl. C07c 169/10, 169/20
U.S. Cl. 260—397.3 19 Claims

1. Compounds of the formula



wherein Z is selected from the group consisting of hydrogen and the lower acyl radical of a hydrocarbon carboxylic acid containing from one to twelve carbon atoms, inclusive.

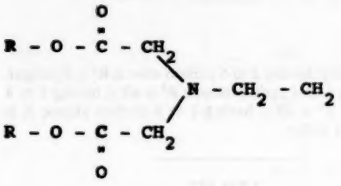
3,846,457

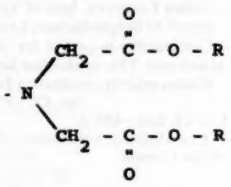
DEEP FAT FRYING WITH EDTA ESTERS TO REDUCE DARKENING

Erlend R. Lowrey, Greenhills, and Vernon E. Weis, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 28, 1971, Ser. No. 157,677
Int. Cl. C11b 5/00
U.S. Cl. 260—398.5 8 Claims

1. A process for reducing the rates of darkening and/or foaming of fats and oils during frying which consists essentially of adding to the fats or oils about 1 to about 1,000 parts per million by weight of alkyl esters of ethylene-diaminetetraacetic acid of the formula





wherein R is hydrogen or an alkyl radical containing from 6 to 24 carbon atoms and wherein at least two R groups are such an alkyl radical.

3,846,458

ARTHROPOD MATURATION INHIBITORS

Meyer Schwarz, Kensington; Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrolton, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 104,781, Jan. 7, 1971,. This application Apr. 6, 1973, Ser. No. 348,844
Int. Cl. C07c 69/52
U.S. Cl. 260—404 1 Claim

1. The methyl ester of 2-cyano-3,7,11-trimethyl-2,6,10-dodecatrienoic acid.

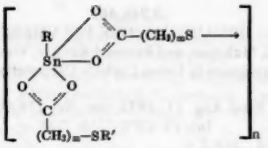
3,846,459

ORGANOTIN MERCAPTOCARBOXYLATES

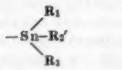
Christian H. Stapfer, Aachen, Germany, assignor to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Filed Oct. 18, 1972, Ser. No. 298,543
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 17 Claims

1. A monohydrocarbyltin mecaptocarboxylate compound of the formula:



wherein:
R′ is H, Na, K or



R, R_1, R_2 and R_3 are alkyl, aralkyl or aryl;
n is an integer of at least 1; and
m is 1 to 3.

3,846,460

METHOD OF MANUFACTURING COPPER OXALATE

Charles C. Fite, Jr., East Windsor, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,275
Int. Cl. C07f 1/08
U.S. Cl. 260—438.1 11 Claims

1. an improved process for the manufacture of copper oxalate comprising:

a. reacting an aqueous ferrous salt solution with a soluble oxalate to precipitate ferrous oxalate;
b. separating ferrous oxalate of step (a) from the resulting slurry;
c. slurrying ferrous oxalate of step (b) in a solution of a water-soluble copper salt to yield copper oxalate and a solution of a ferrous salt; and
d. filtering the copper oxalate of step (c) from the solution of said ferrous salt.

3,846,461

PROCESS OF PREPARING A ZEROVALENT NICKEL COMPLEX WITH ORGANIC PHOSPHORUS COMPOUNDS

Howard E. Shook, Jr., Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 25, 1972, Ser. No. 300,824
Int. Cl. C07f 15/04
U.S. Cl. 260—439 R 7 Claims

1. A process of preparing a zerovalent complex of nickel with an organic phosphorus compound of the formula PZ_3 wherein Z is OR and R is a hdyrocarbyl aryl radical having up to 18 carbon atoms which comprises contacting nicekl chloride with an organic nitrile of the group consisting of 3-pentenenitrile, 4-pentenenitrile, adiponitrile, methylglutaronitrile and ethylsuccinonitrile, an organic phosphorus compound PZ_3, a promoter of the group consisting of NH_3, NH_4X, $Zn(NH_3)_2X_2$ and mixtures of NH_4X and ZnX_2 wherein X is a halide of the group consisting of chloride, bromide and iodide in an amount to provide a moleratio of promoter with respect to nickel of at least 0.01, and a finely-divided reducing metal which is more electropositive than nickel in the organic nitrile containing the organic phosphorus compound, and maintaining the reaction mixture at a temperature in the range of 60°C. to 115°C. to produce the zerovalent complex of the phosphorus compound PZ_3.

3,846,462
ORGANOSILICONE POLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,883
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.2 N **29 Claims**

1. Organosilicone compositions which comprise polysiloxane-polyoxyalkylene block copolymers in which the average number of polyoxyalkylene blocks is between about 2 and about 30 and from about 20 to about 65 weight percent of the oxyalkylene content of said polyoxyalkylene blocks is constituted of oxyethylene units, and in which the polysiloxane backbone is endblocked by trialkylsiloxy units and contains an average of between about 10 and about 200 dialkylsiloxy units and an average of between about 3 and about 100 difunctional monoalkylsiloxy units the respective silicon atoms of which are further bonded to a cyanoalkyl group or to oyxgen of a cyanoalkoxy group.

3,846,463
PROCESS FOR PRODUCING ALKOXYSILANE

Yoichiro Nagai; Iwao Ojima, and Tetsuo Kogure, all of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,133
Claims priority, application Japan, Aug. 24, 1972, 47-84094
Int. Cl. C07b 7/18
U.S. Cl. 260—448.8 R **10 Claims**

1. A process for producing an alkoxysilane which comprises reacting an organosilicon hydride selected from the group consisting of trialkyl monohydrosilanes, triphenyl monohydrosilanes, diphenylalkyl monohydrosilanes, dialkylphenyl monohydrosilanes, diphenyl dihydrosilanes, phenylalkyl dihydrosilanes, dialkyl dihydrosilanes, phenyl trihydrosilanes, and alkyl trihydrosilanes with an alcohol selected from the group consisting of aliphatic alcohols having 1 to 6 carbon atoms, aromatic alcohols, alicyclic alcohols, and polyalcohols in the presence of tris(triphenylphosphine) halorhodium.

3,846,464
PROCESS FOR PREPARING CYCLIC METHYLVINYLSILOXANES

John S. Razzano, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 27, 1973, Ser. No. 419,373
Int. Cl. C07f 7/08
U.S. Cl. 260-448.2 E **8 Claims**

1. A process for the preparation of symtetramethyltetravinylcyclotetrasiloxane comprising the heating of a mixture of 1 part of (i) a hydrolysis product of 99 to 95 parts of methylvinyldichlorosilane and from 1 to 99 parts of vinyltrichlorosilane and (ii) at least 2 parts of a high boiling hydrocarbon solvent in the presence of an effective, catalytic amount of potassium hydroxide.

3,846,465
ALKENOXY SUBSTITUTED UREAS

Jacques Mocotte, Didier au Mont D'Or; Andre Disdier, Lyon, and Francoise Prost, Villeurbanne, all of France, assignors to PROGIL, Paris, France

Continuation-in-part of Ser. No. 742,186, July 3, 1968, abandoned. This application Mar. 11, 1971, Ser. No. 123,440
Claims priority, application France, July 11, 1967, 67.48902; May 30, 1968, 68.50053
Int. Cl. C07c 127/18
U.S. Cl. 260—453 R **2 Claims**

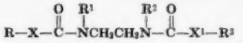
1. A urea derivative selected from the group consisting of N-3, 4-dichloro-phenyl-N'-methyl-N'-allyloxy urea; N-3,4-dichloro-phenyl-N'-methyl-N'-methallyloxy urea; N-3,4-dichloro-phenyl-n'-methyl-n'(1-methyl-2-propene-oxy)-urea and N-3,4-dichloro-phenyl-N'-methyl-n'-crotyloxy-urea.

3,846,466
ESTERS OF DI-(THIOCARBAMOYL)ETHYLENE AS JUVENILE HORMONE MIMICKING AGENTS FOR CONTROL OF INSECTS

Ferenc Marcus Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed May 26, 1972, Ser. No. 257,092
Int. Cl. C07c 155/02
U.S. Cl. 260—455 A **10 Claims**

1. A compound of the formula:



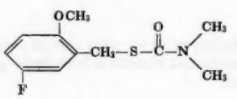
in which R is alkyl having 2 to 6 carbon atoms; R^1 is hydrogen or alkyl having 1 to 4 carbon atoms; R^2 is alkyl having 1 to 4 carbon atoms; R^3 is alkyl having 2 to 6 carbon atoms; X is sulfur and X^1 is sulfur.

3,846,467
2-METHOXY-5-FLUOROBENZYL N,N-DIMETHYL-THIOLCARBAMATE

Akio Kudamatsu, Kanagawa-ken; Masao Miyamoto, and Nobuo Fukazawa, both of Tokyo, all of Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 875,546, Nov. 10, 1969, abandoned. This application Sept. 5, 1972, Ser. No. 286,621
Claims priority, application Japan, Nov. 12, 1968, 43-82249
Int. Cl. C07c 154/02
U.S. Cl. 260—455 A **1 Claim**

1. 2-Methoxy-5-fluorobenzyl N,N-dimethylthiolcarbamate of the formula



(I)

3,846,468
PROCESS FOR THE PREPARATION OF ESTERS OF CARBONIC ACID

Emilio Perrotti, and Gioacchino Cipriani, both of San Donato Milan, Itlay, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Mar. 4, 1971, Ser. No. 121,193
Claims priority, application Italy, Mar. 4, 1970, 21468/70
Int. Cl. C07c 69/00
U.S. Cl. 260—463 **5 Claims**

1. A process for the preparation of esters of carbonic acid having the general formula:

wherein R is a hydrocarbon radical selected from the class consisting of alkyl, aryl or cycloalkyl radicals characterized in that an alcohol represented by the formula ROH in which R

has the aforesaid meaning is reacted with carbon monoxide and oxygen in the presence of a catalyst consisting of cuprous chloride complexed with an organic ligand selected from the group consisting of pyridine, dipyridyl, imidazole, phemanthroline alkyl or aryl, phosphines, dimethylsulfoxide, dimethylformamide, quinuchlidine, CH_3CN, C_6H_5CN, malonitrile, succinodinitrile and adiponitrile.

3,846,469

ISOPROPYLIDENE BIS(2,6-DIHALO-P-PHENYLENE) BIS(POLY-HALOPHENYL) CARBONATES

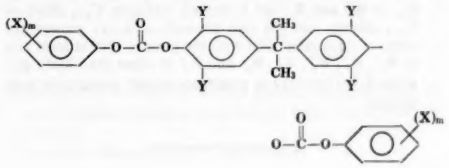
Jeffrey A. Gunsher, and R. Garth Pews, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 12, 1972, Ser. No. 261,666

Int. Cl. C07c *69/00*; **C08k** *1/36*; **C08f** *45/00*

U.S. Cl. 260—463 **2 Claims**

1. A compound of the general formula



wherein

each X is independently Br,

Y is Br, and

m is an integer of 3 to 5.

3,846,470

DERIVATIVES OF 3-BENZOYL-2-(β-HYDROXYPHENETHYLAMINO)-PROPIONITRILE

Thomas Raabe, Heusenstamm uber Offenbach, Germany; Adolf Stachel, deceased, late of Frankfurt am Main-Fechenheim, Germany (by Ingeburg Lydia Katharina Stachel, heiress); Josef Scholtholt, Frankfurt am Main-Fechenheim, and Rolf-Eberhard Nitz, Bergen-Enkhein, both of Germany, assignors to Cassella Farbwerke mainkur Aktiengesellschaft, Frankfurt (Main)-Fechenheim, Germany

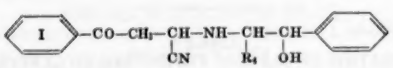
Filed Mar. 29, 1972, Ser. No. 239,359

Claims priority, application Germany, Apr. 2, 1971, 2116293

Int. Cl. C07c *121/50*

U.S. Cl. 260—465 E **6 Claims**

1. Derivative of the 3-benzoyl-2-(β-hydroxyphenethylamino)-propionitrile having the formula



and its pharmaceutically acceptable acid addition salts, wherein R_4 stands for a member selected from the group consisting of hydrogen and methyl, and the nucleus I may have 1 – 3 substituents selected from the group consisting of mono-, di- and tri-methoxy, mono-methyl, mono-ethyl and mono-chlorine.

3,846,471

SEPARATION AND PURIFICATION OF CRUDE 1,4-DICYANO-2-BUTENE

Herbert Schwarz, Opladen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 73,751, Sept. 21, 1970, abandoned. This application July 19, 1972, Ser. No. 273,204

Claims priority, application Germany, Sept. 25, 1969, 1948458

Int. Cl. C07c *121/00*, *121/30*

U.S. Cl. 260—465.8 R **3 Claims**

1. In a process for the separation and purification of crude 1,4-dicyano-2-butene prepared from 1,4-dichloro-2-butene or 1,2-dichloro-3-butene or a mixture of the two by reaction with hydrocyanic acid or sodium cyanide in an aqueous acidic medium at a pH value of from 3 to 4 in the presence of a cuprous salt as a catalyst, the improvement which comprises contacting the reaction mixture at room temperature with methylene chloride, cooling the said mixture until it separates into an upper and lower layer, removing copper from said lower layer by treating said layer with an aqueous solution of hydrocyanic acid in an extraction column and recovering the 1,4-dicyanobutene from said treated lower layer by partial evaporation of the methylene chloride in said layer, followed by crystallization.

3,846,472

DEHYDROGENATION OF ORGANIC COMPOUNDS

Ulrich Bressel, Mannheim; Werner Fuchs, Ludwigshafen, and Rolf Platz, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhine, Germany

Filed Aug. 31, 1972, Ser. No. 285,247

Claims priority, application Germany, Sept. 3, 1971, 2144148

Int. Cl. C07c *121/02*, *121/32*, *69/54*

U.S. Cl. 260—465.9 **4 Claims**

1. In a process for the production of methylmethacrylate, methacrylonitrile, α-methylstyrene, styrene and vinyl-toluene by dehydrogenation of a corresponding saturated compound selected from the group consisting of methyl isobutyrate, isobutyronitrile, isopropylbenzene, ethylbenzene and ethyltoluene with iodine or iodine-yielding compounds and molecular oxygen at temperatures between 400° and 800°C, the improvement which comprises introducing the saturated compound to be dehydrogenated through a two-fluid nozzle at a speed of from 5 m/sec up to the speed of sound in this material into a mixing zone situated in a reaction zone and extending in the direction of flow, the diameter of said mixing zone being from 2 to 100 times the diameter of said nozzle and its length being from 3 to 30 times its diameter, and said mixing zone in its turn being arranged at the lower end of a circulation tube which likewise extends in the direction of flow, the diameter of said circulation tube being from 0.1 to 0.95 times the diameter of said reaction zone.

3,846,473

AMMOXIDATION PROCESS

Jer-Yu Shang, Wilmington, Del., and Raymond Wynkoop, Gladwyne, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Sept. 6, 1972, Ser. No. 286,634

Int. Cl. C07c *121/02*

U.S. Cl. 260—465 C **6 Claims**

1. A process for the vapor phase ammoxidation of hydrocarbons to nitriles which comprises reacting vapors of ammonia and said hydrocarbon under ammoxidation conditions in the presence of a molten salt eutectic mixture of V_2O_5 and K_2O, said molten salt being atomized by a nozzle in the presence of said ammonia and hydrocarbon.

3,846,474

PROCESS FOR HYDROCYANATION OF OLEFINIC COMPOUNDS

Young I. Mok, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Oct. 2, 1973, Ser. No. 402,904
Int. Cl. C07c *121/04*
U.S. Cl. 260—465.8 R 18 Claims

1. In a process of hydrocyanating an olefinically unsaturated organic compound of the group consisting of 3-pentenenitrile and 4-pentenenitrile under a pressure of about 0.05 to 100 atmospheres in the presence of a catalyst consisting essentially of a zerovalent nickel complex of the group consisting of $Ni(PXYZ)_4$, N-bonded nitrile complexes of the formula $Ni(PXYZ)_3R^2CN$ and olefin-bonded complexes of the formula $Ni(PXYZ)_2A$ wherein X is OR, Y and Z are R or OR and R is of the group consisting of aryl radicals and alkyl hydrocarbyl radicals of up to 18 carbon atoms, R^2 is of the group consisting of 2-butenyl, 3-butenyl and cyano-substituted alkyl radicals, and A is of the group consisting of 3-pentenenitrile and 4-pentenenitrile, wherein the R radicals of a given PXYZ ligand of $Ni(PXYZ)_3R^2CN$ and $Ni(PXYZ)_2A$ are so chosen that the ligand has a cone angle of 130° to 170°, the mole ratio of the mononitrile to the nickel complex being in the range of about 1:5 to 2000:1;

the improvement which comprises contacting the catalyst at a temperature in the range of 0°C. to 100°C. with an activated crystalline metal alumino-silicate zeolite molecular sieve having substantially uniform pore diameters in the range of about 3Å to about 13Å, the amount of molecular sieve used being about 5 percent to about 20 percent by weight based on weight of the catalyst solution.

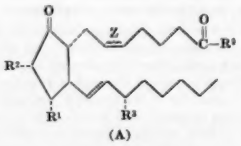
3,846,475

10-HYDROXY PGE AND PGE

Pierre Crabbe, and Angel Guzman, both of Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 3, 1971, Ser. No. 204,681
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D 13 Claims

1. A compound of the formula



(A)

wherein R^1, R^2 and R^3 are independently selected from the group consisting of hydroxy or a hydrocarbon carboxylic acyloxy group having from two through 12 carbon atoms or a grouping selected from those consisting of methoxy, ethoxy, propoxy, 2-propoxy, cyclopropoxy, butoxy, 2-butoxy, t-butoxy, cyclobutoxy, pentoxy, 3-pentoxy, cyclopentoxy, hexoxy, cyclohexoxy, methoxymethoxy, 2-methoxy-ethoxy, 2-ethoxy-ethoxy, 2-aminoethoxy, 2-chloroethoxy, 3-fluorobutoxy, 2-acetoxyethoxy, 3-nitropropoxy, 3-aminocyclobutoxy, 4-hexylcyclohexoxy, 2-phenoxyethoxy, henoxy, tolyloxy, chlorophenoxy, *m*,*m*′-dimethylphenoxy, p-nitrophenoxy, β-chloropropoxy, p-aminophenoxy, teetrahydrofuran-2′-yloxy and tetrahydropyron-2′-epoxy; Z represents a saturated carbon-carbon linkage or a cis carbon= carbon double bond; R^9 is hydroxy; or the group

is a carbonalkoxy group having from two to 12 carbon atoms and pharmaceutically acceptable addition salts thereof.

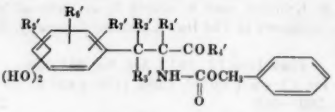
3,846,476

N-BENZYLOXYCARBONYL-DOPA DERIVATIVES

Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Reihen; Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 14, 1971, Ser. No. 189,371
Claims priority, application Switzerland, Oct. 30, 1970, 16045/70
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 12 Claims

1. A compound of the formula



wherein R_1', R_2' and R_3' individually are hydrogen or C_{1-7} alkyl; R_4' is hydroxy, C_{1-7} alkoxy, or phenyl- C_{1-7} alkoxy; R_5' or R_6' and R_7' are hydrogen, halogen, C_{1-7} alkyl, or C_{1-7} alkoxy; and the two phenolic hydroxy groups are ortho to each other and with the proviso that at least one of R_1', R_2', R_3', R_5', R_6' and R_7' is other than hydrogen when R_4' is hydroxy or pharmaceutically acceptable salts thereof.

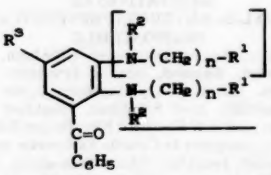
3,846,477

2-ALKYLAMINO BENZOPHENONES

William John Welstead, Jr., and Harold Fisher Stauffer, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Sept. 20, 1972, Ser. No. 290,568
Int. Cl. C07d *125/06*
U.S. Cl. 260—482 C 4 Claims

1. A compound selected from 2-alkylaminobenzophenones having the formula:



wherein:

R^1 is selected from carbamoyloxy, lower-alkyl-carbamoyloxy, and di-loweralkyl-carbamoyloxy,

R^2 is selected from hydrogen, lower-alkyl and carbethoxy,

R^3 is selected from halogen, hydrogen, methoxy, nitro and trifluoromethyl, and

n is selected from zero, one and two.

3,846,478

OXIDATION OF OLEFINIC COMPOUNDS TO GLYCOLS

Richard Williamson Cummins, Cranbury, N.J., assignor to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 549,158, May 11, 1966, Pat. No. 3,488,394. This application Dec. 5, 1969, Ser. No. 882,725
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R 18 Claims

1. Process for the oxidation of olefinic compounds in which the olefinic compound is reacted in aqueous medium at a pH

of at least 7 in the presence of osmium tetroxide with a hypochlorite of an alkali metal or alkaline earth metal at a temperature of about −10° to 60°C to form primarily a dihydroxy addition product of said olefinic compound.

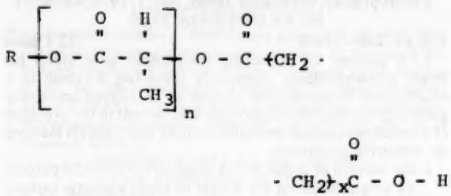
3,846,479

ESTERS OF LACTIC ACID AND FATTY ALCOHOLS

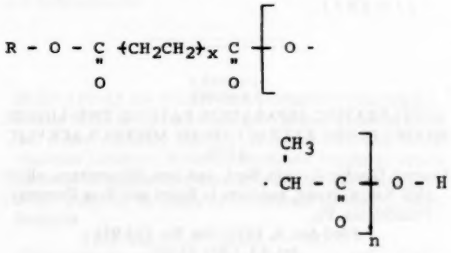
John D. Zech, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

Filed Apr. 1, 1971, Ser. No. 130,465
Int. Cl. C07c 69/68
U.S. Cl. 260—484 A 9 Claims

1. A composition selected from the group consisting of
1. an ester characterized by the formula



wherein R is an alkyl or alkenyl group containing from 10 to 22 carbon atoms, *n* is an integer from 1 to 4, and *x* is 1 or 2,
2. an ester characterized by the formula



wherein R is an alkyl or alkenyl group containing from 10 to 20 carbon atoms, *n* is an integer from 1 to 4, and *x* is 1 or 2,
3. an ester composition obtained by subjecting a mixture of succinic acid or anhydride or adipic acid, lactic acid, and a fatty alcohol to esterification reaction conditions, and
4. a potassium, calcium, or sodium salt of (1), (2), or (3).

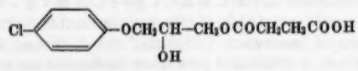
3,846,480

CHLORPHENESIN SUCCINATE AND ALKALI METAL SALTS THEREOF

Yuichi Inai; Kanzo Okazaki, both of Tokyo; Katsutoshi Shimada, Saitama; Kengo Kagei, and Motoaki Bessho, both of Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1972, Ser. No. 284,357
Claims priority, application Japan, Sept. 3, 1971, 46-67494
Int. Cl. C07c 69/40
U.S. Cl. 260—485 G 3 Claims

1. A chlorphenesin derivative selected from the group consisting of chlorphenesin succinate having the formula



and its alkali metal salts.

3,846,481

ARYL CARBOXYLIC ACID SALTS OF DI(N-OCTADECYL)AMINE

Alexander Gaydasch, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 28, 1972, Ser. No. 284,393
Int. Cl. C07c 87/123
U.S. Cl. 260—501.1 4 Claims

1. A salt of di-(n-octadecyl)amine and a phenyl carboxylic acid selected from the group consisting of benzoic and phenylalkylcarboxylic acids wherein said alkylcarboxylic acid moiety contains from 2 to 26 carbon atoms.

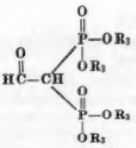
3,846,482

SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS

Al F. Kerst, Alma, Mich., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Aug. 23, 1972, Ser. No. 283,019
Int. Cl. C07f 9/38; C02b 5/06
U.S. Cl. 260—502.4 P 4 Claims

1. An ethane diphosphonate of the formula



wherein R_3 is individually selected from the group consisting of hydrogen, alkali metal ions, alkaline earth metal ions, ammonium ions and lower alkyl amine ions.

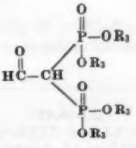
3,846,483

SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS AND ESTERS THEREOF

Al F. Kerst, Alma, Mich., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Aug. 23, 1972, Ser. No. 283,115
Int. Cl. C07f 9/38; C02b 5/06
U.S. Cl. 260—502.4 P 7 Claims

1. An ethane diphosphonate of the formula



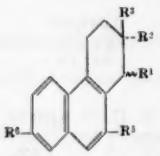
wherein each R_3 is individually selected from the group consisting of hydrogen, alkali metal ions, alkaline earth metal ions, ammonium ions, and lower alkyl amine ions, and R_1 and R_2 are either hydroxy or a $-CH(COOR_6)_2$ group wherein R_6 is hydrogen, an alkali metal ion or an alkyl group of 1 to 8 carbon atoms, provided that either R_1 or R_2, but not both, is always hydroxy.

3,846,484
PROCESS FOR THE PREPARATION OF 1,2,3,4,9,12-HEXAHYDRO-PHENANTHRENES

Norman H. Dyson, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

Filed Dec. 14, 1970, Ser. No. 98,046
Int. Cl. C07c *51/36, 69/76*
U.S. Cl. 260—514.5 **10 Claims**

1. The process which consists essentially of reducing a compound of the following formula:



wherein

R^1 is methyl or ethyl;

R^2 is carboxy, carb(lower)alkyloxy or hydroxymethyl;

R^3 is methyl or ethyl;

R^5 is hydrogen or methyl; and

R^6 is hydroxy or the acetate, propionate, butyrate, trimethylacetate, valerate, methylethylacetate, caproate, t-butylacetate, 3-emthylpentanoate,enanthate, caprylate, triethylacetate, pelargonate, decanoate, undecanoate, benzoate, phenylacetate, diphenylacetate, cyclopentylpropionate, methoxyacetate, aminoacetate, diethylaminoacetate, trichloroacetate, β-chloropropionate, bicyclo [2.2.2] octane-1-carboxylate, or adamantoate ester thereof, with an alkali metal in a lower alkyl amine, di(lower alkyl) amine, or liuid ammonia and in the absence of lower monohydric alcohol and acidic proton donor, to prepare the corresponding 1,2,3,4,9,12-hexahydrophenanthrene.

3,846,485
PHENYLACETIC ACID DERIVATIVES, A METHOD FOR THEIR PREPARATION AND THE APPLICATIONS THEREOF

Jacques Georges Maillard, Paris, and Michel Langlois, Buc, both of France, assignors to Laboratories Jacques Logeais, Issy-les-Moulineaux, France

Filed Nov. 11, 1971, Ser. No. 197,912
Claims priority, application France, Nov. 24, 1970, 70.42109
Int. Cl. C07c *63/00*
U.S. Cl. 260—515 R **2 Claims**

1. A compound selected from the group consisting of trans-2-[4-(2′-methyl-cyclohexyl)-phenyl] propionic acid and its non-toxic salts.

3,846,486
WATER-SOLUBLE TETRACYCLINES

Israel Marcus, Hemonylaan 17, Amsterdam, Netherlands

Filed June 10, 1970, Ser. No. 45,267
Claims priority, application Great Britain, June 12, 1969, 29968/69
Int. Cl. C07c *103/19*
U.S. Cl. 260—519 **10 Claims**

1. In a method of manufacturing a water-soluble tetracycline complex, which comprises the steps of: reacting a first component selected from the group consisting of tetracycline, chlortetracycline and oxytetracycline with a salicylate component selected from the group consisting of methyleneamino-salicylates and methyleneamino-salicylic acid, in methanol to thereby form a precipitate of said complex; filtering said precipitate to remove same from said methanol; washing said complex with methanol, and drying said complex, the improvement comprising performing said reaction in an inert atmosphere.

3,846,487
PROCESS FOR THE PRODUCTION OF FIBER GRADE TEREPHTHALIC ACID

Motoo Shigeyasu; Kenzo Kuihara, and Michio Kuki, all of Ehime, Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Nov. 1, 1971, Ser. No. 194,468
Claims priority, application Japan, Nov. 1, 1970, 45-96334
Int. Cl. C07c *63/26, 51/20*
U.S. Cl. 260—524 R **22 Claims**

1. A process for producing terephthalic acid useful for direct polymerizations comprising subjecting *p*-xylene to a liquid-phase oxidation with oxygen or an oxygen-containing gas in a lower aliphatic carboxylic acid solvent in the presence of a cobalt-manganese-bromine catalyst, said catalyst meeting the following conditions:

a. the amount of cobalt is in a range of 0.05 to 0.50 percent by weight based on the weight of lower aliphatic carboxylic acid solvent,

b. the amount of manganese is in a range of 1 to 20 percent by weight based on the weight of cobalt,

c. cobalt bromide, free bromine, or a mixture thereof is the source of bromine, and

d. the weight ratio of bromine to cobalt is in the range of 1.5 : 1 to 6.0 : 1.

3,846,488
ACCELERATING SEPARATION RATE OF TWO LIQUID PHASES IN THE EXTRACTION OF AQUEOUS ACRYLIC ACID

Susumu Otsuki; Kyoichi Hori, and Isao Miyanohara, all of Shin Nanyo, Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 6, 1972, Ser. No. 215,911
Int. Cl. C07c *53/00*
U.S. Cl. 260—526 N **2 Claims**

1. A method of accelerating the separation rate of an organic solvent phase and an aqueous phase in the organic solvent extraction of an aqueous solution of acrylic acid or methacrylic acid which comprises adding an alkali metal salt or ammonium salt to the aqueous solution containing the acid, the amount of salt being from 0.05 to 1 percent by weight of the combined weights of the solvent, acid, water, and any additional solutes therein, and separating the phases.

3,846,489
PROCESS FOR PRODUCTION OF BETA-ALANINE

Hideyuki Uesugi, and Tsutomu Takeda, both of Yokosuka, Japan, assignors to Tokyo Fine Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1971, Ser. No. 209,338
Claims priority, application Japan, Dec. 29, 1970, 45-120883; Dec. 29, 1970, 45-120884; Dec. 29, 1970, 45-120885; Dec. 29, 1970, 45-120886
Int. Cl. C07c *99/00*
U.S. Cl. 260—534 C **4 Claims**

1. A process for producing β-alanine by the reaction of acrylic acid or methyl or ethyl acrylate with aqueous ammonia at a temperature of 100°C to 200°C for a time of 1 to 5 hours, which consists essentially of effecting the reaction in the copresence of ammonium carbonates and 3,3′-imino dipropionic acid, in which said ammonium carbonates are used in an amount of 0.5 to 1.5 moles on the basis of the carbonate

ion per mole of acrylic acid or methyl or ethyl acrylate and additionally 0.5 to 1.5 moles of said carbonate ion are used for each mole of 3,3'-imino dipropionic acid, said 3,3'-imino dipropionic acid being added in an amount of 0.5 to 5 parts by weight to 1 part by weight of acrylic acid or methyl or ethyl acrylate; and wherein the aqueous ammonia is used in a concentration 20 percent or more such that the aqueous ammonia is present in an amount of 5 moles or more per mole of acrylic acid or methyl or ethyl acrylate and an additional 5 moles or more per mole of 3,3-imino dipropionic acid.

3,846,490

METHOD OF PRODUCING ZETA-AMINOLEVULINIC ACID HYDROCHLORIDE

Nina Ivanovna Aronova, Peschanaya ulitsa, 12, kv. 54; Nina Nikolaevna Makhova, Belomorskaya ulitsa 22, korpus 2, kv. 7; Sergei Ivanovich Zavyalov, ulitsa Garibaldi 23/56, korpus 4, kv. 54; Jury Borisovich Volkenshtein, ulitsa Stanislavskoyo 12/9, kv. 37a, and Galina Mikhailovna Kunitskaya, Novocheremushkinskaya ulitsa 50, korpus 1, kv. 24, all of Moscow, U.S.S.R.

Filed Mar. 1, 1972, Ser. No. 230,984

Int. Cl. C07c *99/00, 101/04*

U.S. Cl. 260—534 R **2 Claims**

1. A method of producing δ -aminolevulinic acid hydrochloride comprising the steps of acylating hippuric acid with monosuccinate acyl chloride in a medium of γ -picoline at a temperature of −5° to 0°C to form a c-acyl derivative, hydrolyzing the c-acyl derivative and isolating the δ -aminolevulinic acid hydrochloride.

3,846,491

DERIVATIVES OF N-2-HYDROXYPHENYLTHIOUREA

Lubomir Mihaylov Shindarov; Angel Simenov Galabov; Dimitar Simov Antonov; Nadejda Atanasova Neykova; Krum Atanasov Davidkov; Vesselina Dimitrova Vassileva; Veneta Borisova Kalcheva, and Dushka Staneva Stoycheva, all of Sofia, Bulgaria, assignors to Medizinska Akademia, Sofia, Bulgaria

Filed Aug. 23, 1972, Ser. No. 282,917

Claims priority, application Bulgaria, Aug. 23, 1971, 17223

Int. Cl. C07c *157/08*

U.S. Cl. 260—552 R **2 Claims**

1. N-methyl-N-(2-hydroxy-5-chlorophenyl)-N'-benzylthiourea.

3,846,492

AMIDE PRODUCTION

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 827,024, May 22, 1969, which is a division of Ser. No. 560,859, June 27, 1966, abandoned. This application May 15, 1973, Ser. No. 360,417. The portion of the term of this patent subsequent to May 26, 1987, has been disclaimed.

Int. Cl. C07c *103/08*

U.S. Cl. 260—558 R **10 Claims**

1. A process for producing a secondary amide comprising contacting an olefinic hydrocarbon selected from straight chain, branched chain and monocyclic compounds having at least one point of ethylenic unsaturation and having up to and including 30 carbon atoms per molecule with a cyanide of the formula R''CN wherein R'' is selected from hydrogen and hydrocarbon radicals having up to 24 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, and aralkyl radicals in the presence of hydrogen fluoride, the mole ratio of hydrogen fluoride to hydrocarbon being at least 1:1, in a reaction diluent comprising sulfur dioxide, and hydrolyzing the reaction mixture thus formed to form an amide.

3,846,493

NITRO SUBSTITUTED ACRYLIC ACID AMIDES

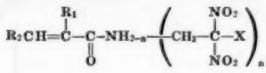
William H. Gilligan, Oxon Hill, and Horst G. Adolph, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1971, Ser. No. 110,626

Int. Cl. C07c *103/12*

U.S. Cl. 260—561 N **9 Claims**

1. A compound of the formula



wherein n is an interger from 1 to 2 inclusive, X is selected from the group consisting of F, NO_2, H and CH_3, R_1 is selected from the group consisting of H and CH_3 and R_2 is selected from the group consisting of H and lower alkyl of 1–4 carbon atoms.

3,846,494

DIALKYLAMIDE ADDUCTS OF LITHIUM CYANIDE

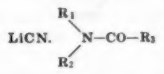
Doyt K. Hoffman, and Ricardo O. Bach, both of Gastonia, N.C., assignors to Gulf Resources & Chemical Corporation, Houston, Tex.

Division of Ser. No. 73,646, Sept. 18, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,781

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R **3 Claims**

1. An adduct in crystalline form corresponding to the formula



where R_1 and R_2 are the same or dissimilar lower alkyl, and R_3 is selected from the group consisting of hydrogen and lower alkyl.

3,846,495

CONVERSION OF NITRILE TO ITS CORRESPONDING AMIDE USING IMPROVED COPPER OXIDE CATALYST

Jerry J. Svarz, La Grange, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Sept. 25, 1972, Ser. No. 292,216

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **4 Claims**

1. A process for catalytically hydrolyzing acrylonitrile to acrylamide, the improvement comprising contacting a reactant feed of acrylonitrile in the presence of water in a liquid phase with an activated copper oxide prepared by the following steps:

A. contacting an aqueous slurry of copper oxide and powdered alumina for ½ to 3 hours at a temperature within the range 0°–90°C with a dilute aqueous solution of from 5–20 percent by weight of an alkali metal hydroxide to yield a slurry containing 1 to 75 percent by weight of copper oxide and 1.0 to 90 percent by weight based on said copper oxide of powdered aluminum to form an activated copper oxide oxide catalyst; and

B. filtering, washing and recovering said copper oxide catalyst.

3,846,496

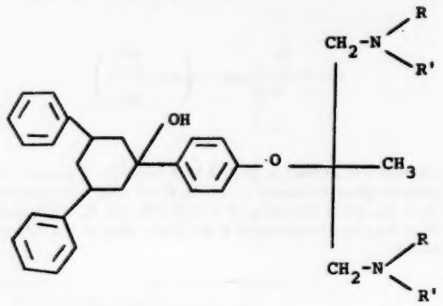
2-METHYL-1,3-PROPANEDIAMINE DERIVATIVES

Mario G. Buzzolini, Morristown, N.J., assignor to Sandoz-Wander Inc., Hanover, N.J.

Division of Ser. No. 42,897, June 2, 1970, Pat. No. 3,711,510.
This application Oct. 13, 1972, Ser. No. 297,237
Int. Cl. C07d *27/02*
U.S. Cl. 260—570.7 5 Claims

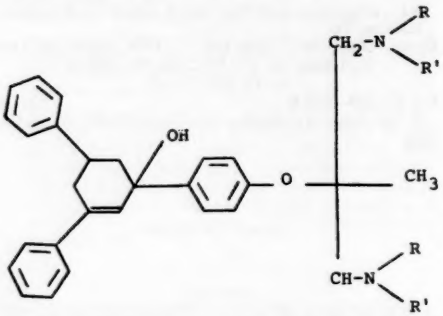
1. A compound selected from the group of:

a. a compound of the formula:



and

b. a compound of the formula:



wherein each of R and R' is independently lower alkyl, or together with the nitrogen to which they are attached form a saturated heterocyclic ring having five to seven ring atoms of which one is nitrogen and the balance are carbon atoms.

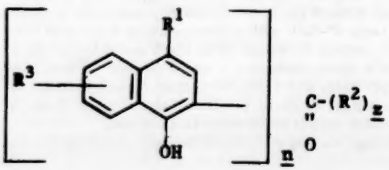
3,846,497

PRODUCTION OF α-NAPHTHOLS

Walter Himmele, Walldorf, and Werner Aquilla, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

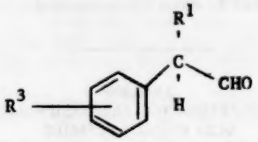
Filed Feb. 17, 1972, Ser. No. 227,271
Claims priority, application Germany, Feb. 19, 1971, 2107958
Int. Cl. C07c *49/82*
U.S. Cl. 260—592 7 Claims

1. A process for the production of α-naphthols of the formula:



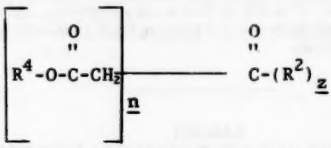
(I)

in which R^1 and R^2 are identical or different alkyls of one to seven carbon atoms, R^3 is hydrogen or a condensed aromatic hydrocarbon radical, n and z are both 1, or R^1 and R^3 are common members of one or two five or six membered cycloaliphatic or aromatic hydrocarbon rings which in each case are condensed on to the aryl nucleus bearing R^3 wherein an arylacetaldehyde of the formula



(II)

in which R^1 and R^3 have the meanings given above is reacted in the presence of a catalyst selected from the group consisting of amine and a carboxylic acid, an amine and an inorganic acid selected from the group consisting of hydrochloric acid and phosphoric acid and salts or carboxamides of said amines and carboxylic acids, with a β-dicarbonyl compound of the formula:



(III)

in which R^2, n, and z have the meanings given above, and R^4 is an alkyl of one to four carbon atoms.

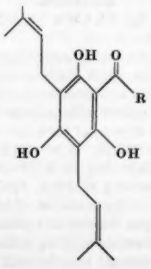
3,846,498

PROCESS FOR PREPARATION OF 3,5-BIS (3,3-DIMETHALLYL)-2,4,6-TRIHYDROXY-PHENONES

Jost Wild, Zurich, and Trudi Sigg-Grutter, Winterthur, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

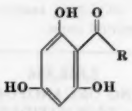
Filed July 12, 1973, Ser. No. 378,477
Claims priority, application Switzerland, July 20, 1972, 10870/72
Int. Cl. C07c *49/82*
U.S. Cl. 260—592 13 Claims

1. A process for the manufacture of compounds of the formula



(I)

wherein R represents a C_{1-5} alkyl group, which process comprises reacting in an inert solvent a compound of the formula



(II)

wherein R has the significance given earlier in this claim, with prenyl bromide or prenyl chloride in a mole ratio of at least 2 of the latter to 1 of II under alkaline conditions in the presence of at least 0.5 equivalent of magnesium oxide based on the prenyl bromide or prenyl chloride and in the presence of at least 1 percent of the amount of compound II of an alkali metal iodide, an alkaline earth metal iodide or a tetraalkylammonium iodide.

3,846,499

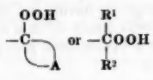
MANUFACTURE OF HYDROCARBYL HYDROPEROXIDE

Peter A. Riedl, Wien, Austria, assignor to Texaco Inc., New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 83,156
Int. Cl. C07c *73/06*
U.S. Cl. 260—610 B **7 Claims**

1. A method of producing a hydrocarbyl hydroperoxide of the formula:

where Z is a radical selected from the group consisting of



where A is α, Ω alkylene of from three to eight carbons, R^1 and R^2 are n-alkyl and total 3 to 39 carbons consisting essentially of contacting a hydrocarbon of the formula:

where Y is cycloalkyl of from four to nine carbons or

where R^1 and R^2 are as heretofore defined with a stoichiometric excess of oxygen containing gas at a first reaction temperature between 130° and 150°C. for a period of between about 1 and 3 hours and subsequently continuing said contacting at a second reaction temperature between 105° and 125°C. for a period of between about 2 and 4 hours.

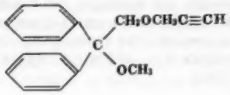
3,846,500

DIPHENYLMETHANE DERIVATIVES

Shigeyoshi Kitamura, Toyonaka; Hajime Hirai, Minoo; Yositosi Okuno, Toyonaka, and Keimei Fujimoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Division of Ser. No. 20,058, March 16, 1970, Pat. No. 3,702,864. This application June 15, 1972, Ser. No. 263,243
Claims priority, application Japan, Mar. 29, 1969, 44-24144; Apr. 12, 1969, 44-28414
Int. Cl. C07c *43/20*
U.S. Cl. 260—611 A **5 Claims**

1. A compound represented by the formula,



3,846,501

PREPARATION OF ALKOXY SUBSTITUTED HYDROXY AROMATIC COMPOUNDS

Jerome A. Vesely, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 31, 1972, Ser. No. 285,162
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 D **8 Claims**

1. A process for the preparation of an alkoxy substituted hydroxy aromatic compound which comprises contacting hydrogen peroxide and a primary aliphatic alcohol of from one to about nine carbon atoms with a hydroxy aromatic compound selected from the group consisting of phenol, naphthol, alkyl phenols and naphthol containing one to four carbon atoms in the alkyl group, pyrocatechin, resorcinol, hydroquinone, hydroxyhydroquinone, phloroglucinol, pyrogallol, 1,2-dihydroxynaphthalene, 1,3-dihydroxynaphthalene, 1,4-dihydroxynaphthalene, and 2,5-dihydroxynaphthalene, said compounds being contacted at a temperature of from about 0° to about 50°C. and a pressure of from ambient to about 100 atmospheres and in the presence of a catalytic amount of a mixture consisting essentially of more than 60 percent hydrogen fluoride and at least about 15 weight percent of carbon dioxide.

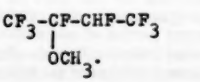
3,846,502

2-METHOXY-3-H-PERFLUOROBUTANE

George L. Moore, South Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Division of Ser. No. 168,380, Aug. 2, 1971, Pat. No. 3,723,629. This application July 25, 1972, Ser. No. 275,020
Int. Cl. C07c *43/00*
U.S. Cl. 260—614 F **1 Claim**

1. 2-Methoxy-3-hydroperfluorobutane of the formula



3,846,503
SATURATED HYDROCARBON ISOMERIZATION PROCESS
Louis Schmerling, and Jerome A. Vesely, both of Riverside, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Division of Ser. No. 258,133, May 30, 1972, abandoned. This application May 25, 1973, Ser. No. 364,207
Int. Cl. C07c 5/22, 5/28
U.S. Cl. 260—666 P 6 Claims

1. A process for isomerizing a saturated hydrocarbon selected from the group consisting of cyclohexane, cycloheptane, cyclooctane, methylcyclohexane, methylcyclooctane, decahydronaphthalene and bicyclohexyl, which comprises contacting said hydrocarbon, at a temperature of from about 0°C. to about 300°C. and a pressure of from about 1 atmosphere to about 200 atmospheres, with a Friedel-Crafts metal halide selected from the group consisting of aluminum and zirconium chlorides and bromides and boron trifluoride in admixture with a chloride or bromide of copper in the cupric valence state, chromiun in the chromic valence state, or tungsten in its +6 valence state, and recovering the resultant isomerized hydrocarbon.

3,846,504
SATURATED HYDROCARBON ISOMERIZATION PROCESS
Louis Schmerling, and Jerome A. Vesely, both of Riverside, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Division of Ser. No. 258,133, May 30, 1972, abandoned. This application May 25, 1973, Ser. No. 364,206
Int. Cl. C07c 5/28
U.S. Cl. 260—666 P 1 Claim

1. A process for the isomerization of cyclooctane which comprises contacting the cyclooctane with a mixture of zirconium chloride and cupric chloride at a temperature of about 0°C. to about 300°C. and a pressure of about 1 atmosphere to about 200 atmospheres, and recovering the resultant cyclooctane isomer.

3,846,505
HF ALKYLATION INCLUDING RECYCLE AND FURTHER ALKYLATION OF THE ALKYLATE-CONTAINING HYDROCARBON
Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 236,049, March 20, 1972, Pat. No. 3,787,518. This application Oct. 18, 1972, Ser. No. 298,708
Int. Cl. C07c 3/54
U.S. Cl. 260—683.45 7 Claims

1. A process for producing an alkylation reaction product from an isoparaffinic reactant and an olefin-acting reactant which comprises the steps of:

a. contacting said isoparaffinic reactant with a first portion of said olefin-acting reactant and with a first hydrogen fluoride alkylation catalyst in a first alkylation zone at alkylation conditions;
b. removing the resultant reaction mixture from said first zone and separating the same into a catalyst phase and a hydrocarbon phase containing alkylate and unreacted isoparaffinic reactant;
c. recycling a first portion of said hydrocarbon phase to said first zone;
d. commingling a second portion of said hydrocarbon phase with a second portion of said olefin-acting reactant and with a second hydrogen fluoride alkylation catalyst, said first and second portions of the hydrocarbon phase being of the same composition and both containing alkylate and unreacted isoparaffinic reactant;
e. subjecting the mixture formed in step (d) to alkylation conditions in a second alkylation zone; and
f. recovering said alkylation reaction product from the effluent of said second zone.

3,846,506
RAPID CURING ORGANOPOLYSILOXANE COMPOSITIONS
Robert Muir Gibbon, West Kilbride, and Edward Keith Pierpoint, Largs, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England
Continuation of Ser. No. 847,746, Aug. 5, 1969, abandoned. This application Nov. 9, 1973, Ser. No. 414,522
Claims priority, application Great Britain, Aug. 21, 1968, 40019/68
Int. Cl. C08g 47/04, 47/10
U.S. Cl. 260–825 10 Claims

1. A composition comprising 100 parts by weight of a diorganopolysiloxane having at least two hydroxyl groups attached to different silicon atoms per molecule and of viscosity not less than 3,000 cS at 25°C., 1 to 20 parts by weight of an organohydrogen-polysiloxane of viscosity not greater than 1,000 cS at 25°C. and having at least one silicon-bonded hydrogen atom for every three silicon atoms, the organo groups in the said siloxanes being selected from the group consisting of alkyl, aryl, aralkyl, alkenyl, cycloalkyl and cycloalkenyl groups, 1 to 20 parts by weight of an aminoalkoxy silicon compound of the general formula

$$R_a^7(R^4R^5NR^6O)_bSiO_{(4-a-b)/2}$$

where R^4 and R^5, which may or may not be the same, are hydrogen or alkyl, cycloalkyl, aminoalkyl or hydroxyalkyl groups, R^7 is a hydrocarbyl or hydrocarbyloxy group, R^8 is an alkylene group or consists of alkylene groups joined by NR^6 groups or oxygen atoms where R^6 is hydrogen or an alkyl group having not more than 5 carbon atoms, a is a number from 0 to 2, b is a number from 0.1 to 4, a + b is not greater than 4 and not less than 1.95 and the total number of carbon atoms in the groups R^8, R^4, R^5 and R^7 is not greater than 24, and 5 to 20 parts of a tin compound of the general formula

$$YO(R_2SnO)_nY$$

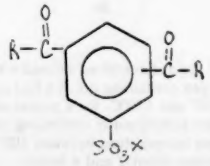
where R is an alkyl group having not more than 20 carbon atoms, Y is R′R″C=N- where R′ is a hydrocarbyl group or hydrogen and R″ is a hydrocarbyl group, and n is 1, 2 or 3, in an organic solvent.

3,846,507
POLYAMIDE BLENDS WITH ONE POLYAMIDE CONTAINING PHTHALATE SULFONATE MOIETIES AND TERPHTHALATE ON ISOPHTHALATE RESIDUES
Ernest C. Thomm, and Barry R. Knowlton, both of Arnprior, Ontario, Canada, assignors to Union Carbide Canada Limited, Toronto, Ontario, Canada
Filed Apr. 6, 1972, Ser. No. 241,838
Int. Cl. C08g 41/04
U.S. Cl. 260—857 TW 8 Claims

1. A process for producing a fibre forming polyamide having improved basic dye receptivity and reduced acid dye receptivity, which process comprises:

A. melt polymerizing

1. a compound of the formula:



wherein R is OH, Cl, OCH_3 or OC_2H_5 and X is Li, Na, K or NH_4 and wherein the

groups are not ortho relative to each other, with

2. components selected from the group consisting of (a) and (b) wherein components (a) are
   a. (i) a compound selected from the group consisting of isophthalic acid and terephthalic acid and their polyamide-forming derivatives in an amount of from 1.0 mole to 9.0 moles per mole of compound (1), and
   a. (ii) a diamine having from 2 to 12 carbon atoms in an amount equal to the mole equivalent of compound (1) plus compound (a)(i); and components (b) are
   b. (i) a compound selected from the group consisting of isophthalic acid and terephthalic acid and their polyamide-forming derivatives, and
   b. (ii) a compound selected from the group consisting of a monoaminomonocarboxylic acid having from 2 to 12 carbon atoms, a lactam of said monoaminomonocarboxyic acid, an aliphatic dicarboxylic acid having from 2 to 12 carbon atoms and a polyamide-forming derivative of said aliphatic dicarboxylic acid, the amount of compound (b)(i) plus the amount of compound (b)(ii) being from 1.0 mole to 9.0 moles per mole of compound (1) with at least 0.25 moles being of compound (b)(i), and
   b. (iii) a diamine having from 2 to 12 carbon atoms, in an amount equal to the mole equivalent of compound (1) plus compound (b)(i), and plus compound (b)(ii) when (b)(ii) is an aliphatic dicarboxylic acid or its polyamide forming derivative to produce a polyamide intermediate having from 10 mole percent to 50 mole percent of sulphonate units based on the recurring units of the polymer, and

B. blending and melt-extruding said polyamide intermediate with from 5 to 95 percent by weight of the blend of normal fibre-forming polyamide in an amount sufficient to produce a fibre-forming polyamide having from 20 to 100 sulphonate gm. equivalents per 10^6 grams of total polyamide and from 35 to 80 amine gm. equivalents per 10^6 grams of total polyamide.

3,846,508

FIRE RETARDANT POLYURETHANES CONTAINING TRICHLOROETHYLENE/VINYL ACETATE COPOLYMER

Dietrich H. Heinert, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 1, 1973, Ser. No. 384,661
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 R **3 Claims**

1. A polyurethane plastic containing a flame retarding amount of a copolymer said amount being in the range from about 1 to about 50 weight percent based on the weight of the polyurethane, and said copolymer consisting essentially of from about 33.3 to about 66.7 mole percent of trichloroethylene and from about 33.3 to about 66.7 mole percent of vinyl acetate wherein from 0 to about 100 mole percent of the copolymerized vinyl acetate is hydrolyzed to vinyl alcohol or is hydrolyzed and then re-esterified with a carboxylic acid, said copolymer having a molecular weight in the range from about 300 to about 20,000.

3,846,509

ACRYLONITRILE-ACRYLATE COPOLYMERS REINFORCED WITH GRAFTED BUTADIENE RUBBER

Gerald Michael Saluti, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 27, 1971, Ser. No. 193,189
Int. Cl. C08f *15/38*
U.S. Cl. 260—876 R **10 Claims**

1. A composition comprising from about 5 to about 30 percent, by weight, of (1) polybutadiene rubber grafted with acrylonitrile and from about 20 to about 80 percent, by weight, of an alkyl acrylate, the alkyl group thereof having from 2–4 carbon atoms, inclusive, the rubber to monomer ratio ranging from about 3 to 1 to about 1 to 2, and from about 70 to about 95 percent, by weight, of (2) a copolymer of (A) from about 60 to about 80 percent, by weight, of acrylonitrile and (B) from about 20 to about 40 percent, by weight, of a lower alkyl acrylate or methacrylate, the alkyl group thereof having 1–3 carbon atoms, inclusive, the number of carbon atoms in the alkyl group of the grafted acrylate of (1) being more than the number of carbon atoms in the alkyl group of the copolymerized acrylate or methacrylate of (2).

3,846,510

NON CROSS-LINKED POLYACRYLATE AS IMPACT MODIFIER

Robert L. Lauchlan, Granger, Ind., and Hugh E. Snodgrass, Arcadia, Calif., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 15, 1972, Ser. No. 235,072
Int. Cl. C03f *15/18*
U.S. Cl. 260—876 R **8 Claims**

1. A blend composition having improved impact strength and processability comprising:

A. between about 80 and 99 percent by weight of a matrix polyblend consisting essentially of
   a. between 10 and 35 percent by weight of a graft copolymer consisting essentially of a spine of
      i. 50 to 85 percent by weight of alkyl acrylate having four to eight carbon atoms in the alcohol component of the ester;
      ii. 10 to 40 percent by weight of vinyl alkyl ethers, said alkyl group containing one to eight carbon atoms; and
      iii. 5 to 20 percent by weight of acrylonitrile; said spine having been grafted with 10 to 90% by weight, (based upon the spine) of styrene and acrylonitrile in the ratios between 60:40 and 90:10 respectively, and
   b. between 90 and 65 percent of a separately prepared copolymer resin of styrene and acrylonitrile, having monomer ratios between 60:40 and 90:10 respectively, in admixture with

B. between about 1 and 20% of a non-cross linked polyacrylate elastomer formed by the polymerization of monomeric alkyl esters of acrylic acid, free of substitutents in either the alkyl group or the acrylic acid and containing up to 8 carbon atoms in the alkyl group.

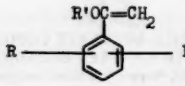
3,846,511

RESINOUS ADHESIVES AND PRODUCTION THEREOF

Harold Wayne Hill, Jr., and Charles W. Moberly, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 19, 1972, Ser. No. 290,313
Int. Cl. C08f *15/22*, *19/02*, *19/18*
U.S. Cl. 260—880 R **8 Claims**

1. A process of preparing graft copolymers comprising copolymerizing (a) an alpha-alkoxystyrene represented by the formula



wherein each R is selected from hydrogen, methyl, and ethyl, and R′ is an alkyl radical having 1 to 6 carbon atoms, and (b) acrylonitrile and/or methacrylonitrile in (c) a solution or liquid suspension of a synthetic rubber prepared by polymerization of conjugated dienes or copolymerization of conjugated dienes with another monomer in the presence of a free radical polymerization initiator wherein the reactants charged to the polymerization reactor based on total weight of monomers (a) and (b) and rubber in (c) are in the range 45–65 weight percent alpha-alkoxystyrene, 15–30 weight percent acrylonitrile and/or methacrylonitrile, and 15–35 weight percent rubber.

3,846,512

CARBAMOYLPHOSPHONATES

William P. Langsdorf, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

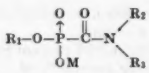
Continuation-in-part of Ser. No. 85,221, Oct. 29, 1970, , which is a continuation-in-part of Ser. No. 803,962, March 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 731,732, May 24, 1968, Pat. No. 3,627,507. This application Aug. 25, 1972, Ser. No. 283,769

Claims priority, application Germany, Aug. 26, 1971, 2142768

Int. Cl. C07f *9/40;* **A01n** *5/00*

U.S. Cl. 260—943 **5 Claims**

1. A compound of the formula:



wherein:

R_1 is alkyl of one through six carbon atoms, chloroalkyl of one through six carbon atoms containing up to three chlorine atoms, bromoalkyl of one through six carbon atoms containing up to three bromine atoms, alkoxy alkyl of three through seven carbon atoms, alkenyl of two through six carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;

R_2 is hydrogen or methyl;

R_3 is hydrogen or methyl;

M is selected from the group consisting of ammonium, hydrogen, sodium, lithium, potassium, calcium, magnesium, manganese, or barium.

3,846,513

2-CHLOROETHANE-(THIONO)-PHOSPHONIC ACID ESTERS

Wolfgang Hofer, Wuppertal-Vohwinkel; Reinhard Schliebs, Cologne; Robert Rudolf Schmidt, Leverkusen, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

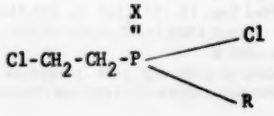
Filed Sept. 29, 1970, Ser. No. 76,594

Claims priority, application Germany, Oct. 4, 1969, 1950099

Int. Cl. C07f *9/34*

U.S. Cl. 260—960 **5 Claims**

1. 2-Chloroethanephosphonic acid and 2-chloroethanethionophosphonic acid compound of the general formula



in which

X is oxygen or sulfur;

R is unsubstituted aryloxy or substituted aryloxy substituted with alkyl, hydroxy or nitro.

3,846,514

O-ALKYL-O-[4-(N-ALKYL-CARBAMOYL)-BENZALDOXIME]-(THIONO)(THIOL)PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Gerhard Schrader, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

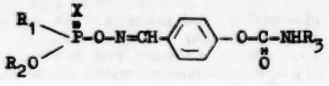
Filed Aug. 13, 1973, Ser. No. 387,978

Claims priority, application Germany, Aug. 26, 1972, 2242135

Int. Cl. A01n *9/36;* **C07f** *9/16*

U.S. Cl. 260—938 **7 Claims**

1. A (thiono)phosphoric(phosphonic) acid ester of a benzaldoxime of the formula



in which

R_1 is lower alkyl, lower alkoxy, lower alkylmercapto or phenyl,

R_2 and R_3 each independently is lower alkyl, and

X is oxygen or sulfur.

3,846,515

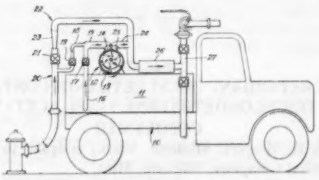
MECHANICAL FOAM GENERATING METHOD AND SYSTEM

Hilding V. Williamson, Highland Park, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Continuation of Ser. No. 170,786, Aug. 11, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,138

Int. Cl. B01f *3/04*

U.S. Cl. 261—18 B **16 Claims**

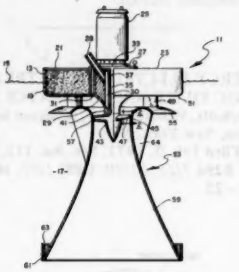


1. A mechanical foam generating system comprising a pump having a gas inlet port, a liquid inlet port and a foam outlet port, a liquid inlet conduit connected to the liquid inlet port, a main water conduit adapted for connection to a source of water under pressure, a pump water conduit between the main water conduit and the liuqid inlet conduit, a foam liquid concentrate conduit adapted for connection to a concentrate reservoir and connected to the liquid inlet conduit, a foam conduit connected to the foam outlet port and a by-pass water conduit between the main water conduit and the foam conduit whereby a portion of the water by-passes the pump.

3,846,516
AERATOR DEVICE AND METHOD

Larry W. Carlson, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 25, 1972, Ser. No. 293,302
Int. Cl. B01f *3/04*
U.S. Cl. 261—87 15 Claims



1. In an aeration device having an axial flow impeller disposed to rotate below the surface of a liquid body, the improvement comprising:

a. an impeller, including a plurality of radially extending propeller blades, at least some of which are hollow, said hollow blades having at least one opening formed therein to permit passage of gas into said liquid from the interior of said hollow blades;

b. means communicating with the interior of said hollow blades wherefrom the gas flows out the openings in said blades as said blades rotate to impel liquid;

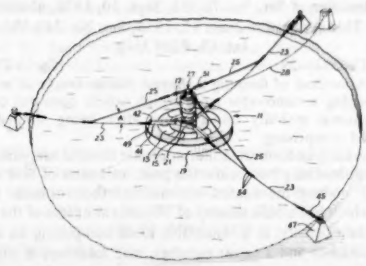
c. a vertically disposed venturi arranged to surround the impeller with the throat of said venturi adjacent said blades so that said blades impel a downward flow of liquid in the lower expanding portion of said venturi, said venturi having an inlet end disposed above said blades, said inlet end having a radially extending lip which curves inwardly and downwardly to said throat portion adjacent said blades; and

d. float means which support said venturi from above, said float means having a smoothly curved bottom which is spaced above said inlet end of said venturi and which cooperates with said lip to form a smooth course for liquid into said inlet end.

3,846,517
STABILIZATION SYSTEM FOR A FLOATING WATER AERATOR

George Ross, Downers Grove, Ill., assignor to Clow Corporation, Oak Brook, Calif.

Filed July 26, 1972, Ser. No. 275,258
Int. Cl. B01f *03/04*
U.S. Cl. 261—91 12 Claims

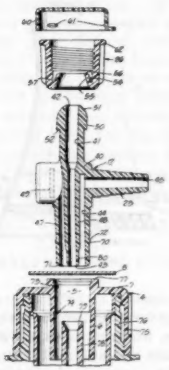


1. A water aeration system comprising a floating aerator and means to stabilize said aerator, said floating aerator including a rotor having blades for movement in the water to be aerated, a motor for driving said rotor and a float disposed generally outboard of said rotor, said float supporting said motor above the water line; said stabilization means including a plurality of mooring lines, each having one end attached to said aerator generally adjacent said float and the other end fixed to a shore anchor and a plurality of inextensible guys, each of said guys having one end connected to an upper location upon said floating aerator, which location is positioned generally centrally thereof and serves to interconnect the upper ends of said plurality of guys, and the other end attached to one of said mooring lines at a predetermined distance from said aerator, said guys and said mooring lines cooperating to stabilize said floating aerator.

3,846,518
PORT SYSTEM FOR MEDICAL HUMIDIFIER CONTAINER

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed June 19, 1972, Ser. No. 264,315
Int. Cl. B01f *3/04*; A61m *15/00*
U.S. Cl. 261—123 24 Claims



1. In a system for administering a humidified medical gas to a patient during inhalation therapy and substantially deterring cross-contamination between patients comprising, for use in combination with a source of dry medical gas to be administered to a patient after humidification and means for connection to said source of medical gas for dispensing the gas;

a disposable dry medical gas humidifying assembly including means for connection to said means for dispensing the dry medical gas from the source; and means for administering humidified medical gas to a patient, said gas humidifying assembly comprising a disposable container for a medical liquid, said container including connection-and-retention means; and an adapter for connecting the dry medical gas source with the medical liquid container comprising a body member having a dry gas passage extending from an inlet adjacent a top portion of the body member to an outlet adjacent a lower portion of the body member, and a humidified gas passage extending from an inlet adjacent a lower portion of the body member upwardly to an exit portion on the body member; first connecting means on the body member at the dry gas passage inlet for connecting the adapter to the medical gas source; second connecting means at the dry gas passage outlet and humidified gas passage inlet for connecting the adapter with the medical liquid container, said second connecting means of the adapter and the connection-and-retention means of said container having interfitting

structure including portions that permit the adapter to be manually connected to the container and integrate it as a permanent non-separable part thereof and deter subsequent manual separation therebetween whereby the adapter and medical container are discarded as a unit after inhalation therapy with the unit is completed and reuse of the humidifier assembly is deterred so that cross-contamination between patients is obviated.

3,846,519

METHOD OF PREVENTING THE FORMATION OF CLOUDS OF GAS OR SMOKE ON COOLING TOWERS, AND COOLING TOWER FOR CARRYING OUT THE METHOD

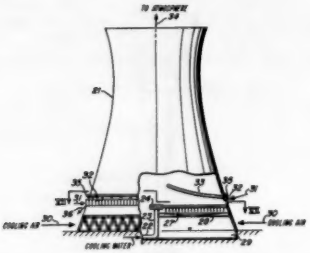
Kurt Spangemacher, Wasserburg, Inn, Germany, assignor to Balcke-Durr Aktiengesellschaft, Marienplatz, Bochum, Germany

Filed July 30, 1970, Ser. No. 59,646

Claims priority, application Germany, Aug. 1, 1969, 1939174. The portion of the term of this patent subsequent to Jan. 18, 1989, has been disclaimed

Int. Cl. B01f *3/04*

U.S. Cl. 261—151 **8 Claims**



1. A wet cooling tower system for preventing the formation of clouds thereon, which includes; a wet cooling tower with cooling insert means and with inlet means for admitting cooling water, air inlet means associated with said cooling tower for admitting cooling air thereto, said cooling tower also being provided with exhaust means for discharging exhaust air from said cooling tower, indirect heat transfer means having inlet means for a surrounding gaseous medium and also having internal means for heating up said gaseous medium admitted thereto, and conduit means establishing communication between said heat transfer means and said exhaust means for admixing said heated-up gaseous medium from said heat transfer means with the exhaust air discharged from said wet tower into said exhaust means.

3,846,520

SINTERING OF SOL-GEL MATERIAL

Engelbertus Jacobus Bruijn, Den Helder; Fokko Wessel Hamburg, Petten; Johannes Bastiaan Willem Kanij, Zvenaar, and Robert de Rooy, Egmond, all of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Filed May 17, 1972, Ser. No. 254,038

Claims priority, application Netherlands, May 17, 1971, 7106712

Int. Cl. G21c *21/00*

U.S. Cl. 264—.5 **12 Claims**

1. A method for the conversion of spherical sol-gel fissile material into spherical oxidic, carbidic or carbonitridic nuclear fuel material, by means of a sintering step, comprising heating the sol-gel spheres to the sintering temperature and cooling from the sintering temperature at respectively heating and cooling rates ranging between 10° and 65°C/minute, the sol-gel material being a composition prepared by solidification through the action of one or more of the factors heat, dehydration, hydrolysis by the action of free ammonia, or of ammonia formed by the decomposition of an ammoniadonor on a globular aqueous metalliferous aqueous phase, selected from the group consisting of metal hydroxide sols, metal salt solutions or mixtures thereof.

3,846,521

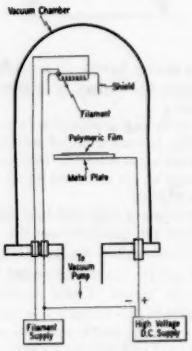
LOW ENERGY ELECTRON BEAM TREATMENT OF POLYMERIC FILMS, AND APPARATUS THEREFORE

Fred D. Osterholtz, Warwick, N.Y., assignor to Union Garbide Corporation, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,125

Int. Cl. B29d *7/20, 21/00;* **C08j** *1/02;* **H01g** *37/30*

U.S. Cl. 264—22 **43 Claims**



1. Process which comprises exposing an organic polymeric film to a beam of low energy electrons at a potential from about 10 to about 30,000 volts, and under an absolute pressure below the pressure at which glow discharge occurs and below about 5×10^{-3} torr, the total exposure of said polymeric film to said beam of electrons being within the range of from about 0.005 to about 1,000 volt-ampere-seconds per square centimeter and sufficient to lower the permeability of said polymeric film with respect to at least one gas.

3,846,522

FORMING OF THERMOPLASTIC POLYMERS

Conrad Goldman, Rochester, N.Y., assignor to Elpex, Inc., Rochester, N.Y.

Continuation of Ser. No. 70,958, Sept. 10, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,395

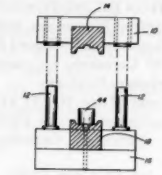
Int. Cl. B29f *5/00*

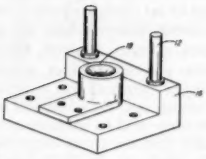
U.S. Cl. 264—25 **9 Claims**

1. A method of forming a shaped plastic article in a press comprising a removable mold which article does not obtain dimensional stability immediately after being shaped the method comprising:

1. heating comminuted thermoplastic resin to temperatures approaching but below the point of fusion of said resin;
2. placing the heated comminuted thermoplastic resin, which has a bulk density of 52 percent or less of the solid resin density, in a removable mold comprising an upper member and a lower member, said members in unlockable mated position, at least the upper member having a bore which allows the passage of the comminuted resin to the interior of the mold;

3. subjecting the comminuted resin, by means of a molding cap being slidably movable in the bore, to a forging force of such magnitude and rate of application such that the kinetic energy of the forging means is converted to sufficient thermal energy thereby forming a forged article from the comminutive resin;





4. without releasing the pressure produced by the forging force removing the mold containing the forged article from the press;
5. allowing the forged article to reach a state of dimensional stability; and
6. releasing the pressure and removing the stabilized, forged article from the mold.

3,846,523

METHOD OF FORMING EXPANDED COMPOSITE MATERIALS IN THE ABSENCE OF RECOGNIZED BLOWING AGENTS

James D. Geerdes, Cheshire, Conn., assignor to American Manufacturing Company, Inc., Brooklyn, N.Y.

Filed Dec. 12, 1967, Ser. No. 689,787
Int. Cl. B29d *27/00*
U.S. Cl. 264—41 **7 Claims**

1. A method of forming an expanded polymeric material comprising, milling together particles of a thermoplastic polymeric material and submicro particles of an additive material, both said materials being essentially non-volatile at a temperature at which said polymeric material is fluid, said milling being effected by a rotary impact mill having impactors traveling at a velocity of at least about 600 linear feet per second, to form a composite of said two materials, said composite consisting essentially of said two materials, confining said composite in a mold cavity under pressure and heating said composite to said temperature to render said polymeric material fluid, releasing said pressure while said polymeric material is fluid and permitting said composite to expand as a foam, and solidifying the foamed polymeric material with said additive particles retained therein.

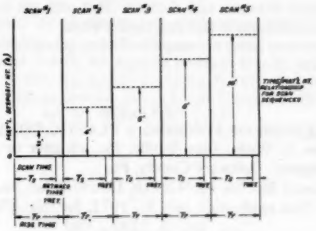
3,846,524

STRUCTURAL PANEL AND METHOD OF MAKING SAME

Richard R. Elmore, and Benjamin M. Couch, both of Herrin, Ill., assignors to Dura-Plex Industries, Inc., Peoria, Ill.

Filed Jan. 17, 1972, Ser. No. 218,398
Int. Cl. B29d *27/00*
U.S. Cl. 264—45.3 **13 Claims**

1. A method of making a structural panel comprised of fiber-reinforced skin sheets having a thermosetting foamable resin composition core therebetween for use in building structures and the like, comprising the steps of applying a first layer of gel coat to spaced surfaces of a mold which are configured to provide a panellike structure applying a first layer of polyester resin onto said gel coat, applying a first layer of glass fiber roving onto said layer of polyester resin before curing thereof, forcing the glass fiber roving into said first layer of resin in a manner to impregnate the roving fibers into said first layer of resin, applying a second layer of polyester resin into the combined first layer of resin and fibers, applying a second layer of glass fibers onto said second layer of resin before said second



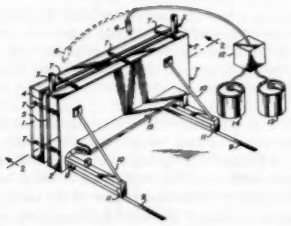
layer of resin is cured such that portions of the fibers of said second layer of fibers project outwardly from said second layer of resin on said space surfaces, curing said layers of resin, and introducing a thermosetting foamable core composition into a cavity defined by said spaced surfaces such that the thermosetting core composition substantially fills said cavity and integrally adheres to said opposing spaced surfaces and outwardly projecting fibers thereon to provide an increased area of surface adhesion between the thermosetting core composition and each of said skin sheet fibers, and effecting curing of said thermosetting core composition.

3,846,525

METHOD FOR MANUFACTURING FOAM SANDWICH PANELS

Frank E. Kinne, Eloy, and Phil D. Carmack, Casa Grande, both of Ariz., assignors to Permatank Engineering & Mfg. Co., Inc., Eloy, Ariz.

Filed Aug. 25, 1971, Ser. No. 174,806
Int. Cl. B29c *5/08;* B29d *27/04*
U.S. Cl. 264—46.5 D **1 Claim**



1. A method for fabricating a foam sandwich panel comprising the steps of:
   a. placing a first sheet of material, which sheet comprises one outer layer of the completed panel, in an upright position against the inner surface of a press outer stationary member;
   b. placing a second sheet of material, which sheet comprises a second outer layer of the completed panel, in an upright position against the inner surface of a press outer movable member;

c. positioning a temporary and releaseable bottom and side closure member against one of said sheets;
d. moving said movable press member toward said stationary press member until said first and said second sheets are juxtaposed in contact with said closure member and spaced apart by said closure member;
e. securing said movable press member to said stationary press member;
f. injecting a stream of foamable polyurethane reaction mixture in a horizontal pass into the open space between the tops of said sheets; and
g. repeating said injecting step at timed intervals until the space between said sheets is filled with the foamed polyurethane from said reaction mixture,

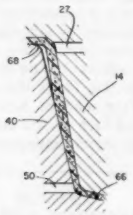
said timed interval being equal to or greater than the rising time of said reaction mixture.

3,846,526

METHOD OF FORMING A PLASTIC CONTAINER

Gordon E. Wade, Glen Riddle, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Division of Ser. No. 10,742, Feb. 12, 1970, Pat. No. 3,703,255. This application July 31, 1972, Ser. No. 276,826
Int. Cl. B29d *27/00*
U.S. Cl. 264—46.8 A **5 Claims**



1. A method of forming a foamed thermoplastic container having a bottom wall, a sidewall joining said bottom wall and extending upwardly and outwardly from said bottom wall, said sidewall having an inner surface which is free of protuberances, a lip defining an opening into said container, and a nesting ledge extending outwardly from said sidewall and disposed imtermediate the upper end of said sidewall and said lip, said method comprising the steps of:

A. clamping a heated, foamed, cellular thermoplastic sheet between male and female mold members, said male and female mold members when brought into telescoping relationship with each other defining the boundaries of a cavity therebetween, said cavity including a bottom region in which the bottom wall of the container is formed, a side region in which the entire sidewall of the container is formed, a nesting ledge region in which the nesting ledge is formed and lip region in which said lip is formed, the side surface of the male mold member which defines one boundary of the side region of the cavity is joined to a bottom surface of the male mold member which defines one boundary of the bottom region of the cavity, said side surface continuously sloping outwardly from the bottom surface and being substantially smooth and uninterrupted;

B. relatively moving said male and female mold members into final forming position to stretch said sheet into said cavity so that said sheet is compressed in the bottom region and the lip region of the cavity and incompletely fills the side region of said cavity; and

C. applying a vacuum to opposite sides of the sheet in the side region of the cavity to expand the sheet into conformity with substantially the entire cooperating surfaces of the mold members which define said side region to thereby form a container in which the sidewall has a greater thickness and a lower density than the lip region and the compressed bottom region.

3,846,527

PRODUCTION OF INORGANIC FIBERS

Gerhard Winter; Manfred Mansmann, both of Krefeld; Nikolaus Schon, Leverkusen, and Hildegard Schnoring, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 77,324, Oct. 1, 1970, abandoned. This application Apr. 25, 1972, Ser. No. 247,457
Claims priority, application Germany, Oct. 17, 1969, 1952398
Int. Cl. C04b *35/64*
U.S. Cl. 264—63 **19 Claims**

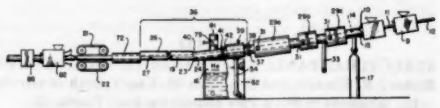
1. A process for making inorganic fibers from a liquid medium comprising dry spinning into an evaporative environment a solution or sol containing one or more inorganic fiber forming compounds selected from the group consisting of nitrates, sulfates, acetates, oxalates, formates, tartrates, and citrates chlorides and oxychlorides, or sols selected from the group consisting of hydroxide sols, oxide sols, phosphate sols, silicate sols, borate sols, tungstate sols and molybdate sols, which upon heating yield an oxide or carbide, of at least one element selected from the group consisting of Be, Mg, Ca, Sr, Ba, rare earths, Th, U, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Fe, Co, Ni, Zn, B, Al, Ga, Si, Ge, Sn, Li, Na, K, Rb, Cs, Re, Ru, Os, Ir, Pt, Rh, Pd, Cu, Ag, Au, Cd, In, Tl, Pb, P, As, Sb, Bi, S, Se, and Te, said compounds being present in a concentration of about 5 percent to about 60 percent by weight, expressed as an oxide, and 0.01 to 5 percent by weight of a linear polymeric fiber-forming material having a degree of polymerization of at least about 2000 selected from the group consisting of olefin and diolefin polymers and copolymers, polyethers, polyphosphates, kurrol salts, polymers and copolymers of acrylamide, methacrylamide, methylmethacrylate, acrylonitrile, acrylic acid, methacrylic acid and their salts, polyvinylacetate, polyvinylalcohol, polyvinylmethylether and copolymers with maleic acid and their salts, the degree of polymerization and the amount of said polymeric fiber forming material being selected to produce a liquid medium having a viscosity of 1–100 poise and a degree of spinnability of at least 50 cm, and heating the dry spun fibers to a temperature sufficiently high to convert said inorganic fiber forming compound to an oxide or carbide.

3,846,528

METHOD OF CONTINUOUS VULCANIZATION IN THE PRESENCE OF HELIUM OR HYDROGEN

Willis L. Chrisman, Fairmont, Ind.; John D. Stauffer, De Kalb, Ill., and Edwin H. Arnaudin, Jr., Eden, N.C., assignors to The Anaconda Company, New York, N.Y.

Continuation-in-part of Ser. No. 842,418, May 9, 1969, Pat. No. 3,645,656. This application Feb. 9, 1972, Ser. No. 224,876
Int. Cl. B29h *5/28, 7/16;* **D01d** *11/06*
U.S. Cl. 264—85 **4 Claims**



1. A method of continuously vulcanizing a freshly extruded polymeric strand which comprises passing said strand through a zone wherein a gas selected from the group consisting of helium and hydrogen is disposed, simultaneously maintaining

said gas under several atmospheres pressure and in relatively unchanging and stagnant state within said zone about said strand, transmitting to said strand by conduction through said gas heat sufficient to vulcanize said strand, and cooling said strand in a cooling area, said gas also serving as heat insulation against heat transfer between said cooling area to said zone.

3,846,529

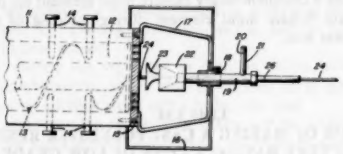
EXTRUSION CUTTING DEVICE

Charles S. Poteet, III, Cockeysville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 192,167, Oct. 26, 1971, Pat. No. 3,759,642. This application June 28, 1973, Ser. No. 374,455

Int. Cl. B26f 3/00; B29c 17/14

U.S. Cl. 264—142 **11 Claims**



1. A method of cutting extrusions at the face of an extruder die comprising extruding a material through said die to form multiple continuous extrusions and directing a shaped stream of high pressure gas from the center region of said die face outwardly toward the periphery of said die face whereby a surface of the extrusions in a perpendicular relationship to the face of said die is contacted by said shaped gas stream and said multiple extrusions are severed at essentially constant lengths.

3,846,530

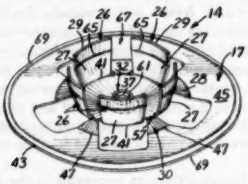
TAPE SPOOL

Michael W. Longworth, Glendale Heights, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 31, 1972, Ser. No. 302,513

Int. Cl. B29d 31/00

U.S. Cl. 264—154 **6 Claims**



1. A method of forming a tape spool from a substantially flat sheet of plastic stock for supporting a coil of endless magnetic tape for use in a magnetic tape cartridge, said method comprising the steps of: piercing a sheet of flat plastic stock and forming a central spindle receiving opening at an axis for the spool, cutting pairs of outwardly extending slits each joined with an outer transverse slit in said sheet at locations about said spindle receiving opening to define therebetween hub portions for bending about inner portions integrally attached to remainder of the flat plastic sheet, deforming a central configuration in the plastic sheet from its flat planar condition to provide a spindle collar surface for bearing against the spindle for journaling the spindle for rotation in the cartridge and deflecting a portion of said sheet downwardly to form a surface for resting on the cartridge when the spindle is rotating, bending an arcuate cross section for each of said hub segments to define collectively a generally cylindrical surface about said axis for guiding the tape and bending said hub portions upwardly from the plane of said sheet about said integral inner portions to positions upstanding from the plane of said flat sheet to form a series of hub segments spaced circumferentially about said spindle receiving opening for supporting a coil of magnetic tape and leaving openings in a flat platform portion of said sheet and aligning said upwardly bent segments to define an upstanding hub from which tape may be payed out from the spool.

3,846,531

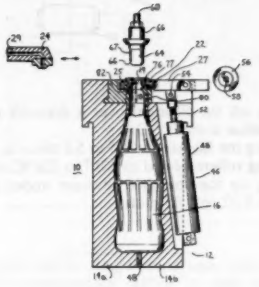
FINISHING HOLLOW BLOW MOLDED ARTICLES

Joseph R. Reilly, Navgatuck, Conn., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 120,514, March 3, 1971, Pat. No. 3,736,091. This application Oct. 19, 1972, Ser. No. 299,007

Int. Cl. B29c 17/07, 17/12

U.S. Cl. 264—161 **6 Claims**



1. A method of finishing a blown hollow thermoplastic article having waste flash attached to a neck portion which comprises:

a. establishing a difference in temperature in the forming cavity between the neck portion and a flash portion adjacent said neck portion which is thicker than that of said neck portion, the temperature of said neck portion being sufficiently low as to resist substantial deformation on application of a force thereto and the temperature of said thickened portion being 25° to 100°F. in excess of that of the neck portion but below that at which the plastic is incapable of sustaining its form;

b. gripping the waste flash;

c. relatively moving the gripped waste flash and the article away from each other to sever the flash from the neck in the area of the thickened portion leaving an irregular lip extending around the opening at the outer end of the neck; and then

d. advancing a forming mandrel into said opening to roll said lip forwardly toward the body of the article and outwardly toward the wall of the blown neck to form a smooth neck finish on the article.

3,846,532

CONTINUOUS SPINNING AND STRETCHING PROCESS OF THE PRODUCTION OF POLYAMIDE-6 FILAMENTS

Harry Kubitzker; Bela Von Falkai, and Alfred Reichle, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 4,350, Jan. 20, 1970, abandoned. This application Mar. 1, 1971, Ser. No. 119,930

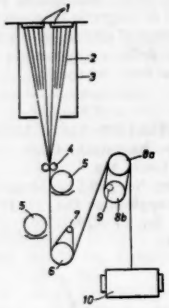
Claims priority, application Germany, Jan. 28, 1969, 1904234

Int. Cl. D01f 3/10

U.S. Cl. 264—210 F **5 Claims**

1. A continuous process for the production of stretched polyamide-6 filament consisting of the sequential steps of

1. spinning polyamide-6 filament from a melt;
2. cooling the spun filament;
3. dressing the filament immediately after cooling with 0.4 to 0.8 percent by weight of a non-ionic dressing agent which is temperature resistant up to 220°C;



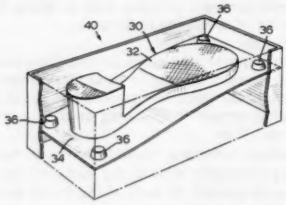
4. drawing off the filament over a draw-off roller with a transposition device;
5. stretching the filament to 2.5 to 5.5 times its length using stretching rollers heated to 170° to 220°C; and
6. winding up the stretched filament under a tension of between 0.02 to 0.08 g/dtex.

3,846,533

IMPROVEMENTS IN THE MANUFACTURE OF MOLDS FOR FOOTWEAR

Joseph D. Carrier, Toronto, Ontario, Canada, assignor to J. D. Carrier Shoe Co., Limited, Toronto, Ontario, Canada

Filed Aug. 2, 1972, Ser. No. 277,265
Claims priority, application Canada, July 11, 1972, 146798
Int. Cl. B29c 1/02
U.S. Cl. 264—225 **9 Claims**



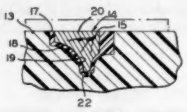
1. A method of making a mold element having a mold cavity for molding a footwear sole comprising the steps of
   a. forming a prototype having an upper surface, a lower surface and side surfaces conforming to the shape of the sole which is to be produced by molding,
   b. securing a face plate, which is deformable to the longitudinal curvature of the upper surfaces of the prototype and having a length and width which is greater than the length and width of the prototype, to the prototype in a position overlying the prototype and projecting laterally therefrom to form a lip having a lower surface extending about the prototype,
   c. rendering the lower surface of the lip and the lower and side surfaces of the prototype electrically sensitive by applying a coating of an electrically conductive material thereto,
   d. electroplating the electrically sensitive areas with a metal selected from the group consisting of nickel, copper, zinc and tin to form a metal shell consisting of a main body portion and a flange projecting laterally therefrom, said main body portion having an inner surface formed to provide a cavity conforming to the shape of the lower and side surfaces of the prototype, said main body portion and said flange having an outer surface,
   e. forming a reinforcing backing on said outer surface of said main body portion and said flange by molding a body of settable material thereon,
   f. removing said face plate and prototype to expose said cavity, and
   g. forming a complementary closure mold element for closing said female mold element during molding of said footwear sole.

3,846,534

METHOD OF MAKING A CAST POLYESTER RESIN STRUCTURE HAVING A CORE OF LOW GRADE MATERIAL

John N. Hallinan, 4444 S.W. Greenleaf Dr., Portland, Oreg. 97221, and William F. Costner, 19515 S. Fisher's Mill Rd., Oregon City, Oreg. 97045

Filed Sept. 24, 1971, Ser. No. 183,421
Int. Cl. B29c 1/02
U.S. Cl. 264—225 **1 Claim**



1. A method of making a cast polyester resin simulated wood frame having an open center and a core of low grade material and which frame will precisely duplicate a given wood master including the surface texture thereof, comprising making a master frame of a desired configuration from wood having a surface texture which it is desired to reproduce;
   placing said master face up on a supporting surface;
   pouring a molding compound around and over said master to form an open top mold, said molding compound being adapted precisely to pick up said surface texture of said master;
   assembling a core structure generally in the shape of said master frame and comprising at least four elements so as to form a frame, said elements being of lesser cross-sectional area than said master frame, said elements being made from a material of lesser cost than polyester resin; attaching said elements together by staples to form a core;
   placing said mold on a casting surface with its open top up;
   pouring a mixture of a polyester resin of a desired color and a catalyst into said mold;
   then placing said core in the mixture in said mold with the surfaces of said core in a desired spaced relation with respect to the walls of the mold cavity, said core being inserted and weight down in said mixture to a level wherein said mixture rises to the level of the top of said core; and
   permitting said mixture to gel and form a hardened resin cover layer about said core, the resin reproducing said surface texture of said master frame in precise detail.

3,846,535

METHOD FOR ABSORBING SULFUR OXIDES FROM GASEOUS MIXTURES AND REGENERATING THE ABSORBENT

Anthony G. Fonseca, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 5, 1972, Ser. No. 285,962
Int. Cl. C01b 17/00
U.S. Cl. 423—242 5 Claims

1. A process for absorbing sulfur oxides from gaseous mixtures containing sulfur oxides and regenerating the adsorbent comprising sequentially:

a. contacting said gaseous mixture with an absorbent selected from the group consisting of sodium bicarbonate and potassium bicarbonate,

b. admixing the resulting sodium or potassium sulfite, sulfate, and combinations thereof with water and ammonium bicarbonate or ammonia and carbon dioxide,

c. separating the resulting sodium or potassium bicarbonate and the resulting ammonium sulfite, sulfate, and combinations thereof

d. reacting the separated ammonium sulfite, sulfate, and combinations thereof with an alkaline earth metal oxide or an alkaline earth metal hydroxide, and

e. separating the resulting ammonia and the resulting alkaline earth metal sulfite, sulfate, and combinations thereof

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3,846,536

REGENERATION PROCESS FOR FLUE GAS SORBENT

Neville L. Cull, Baker, and Darius B. Vohsberg, Baton Rouge, both of La., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Sept. 7, 1972, Ser. No. 286,941
Int. Cl. B01j 9/04, 9/15, 9/16, 9/20; C01b 17/00
U.S. Cl. 423—244 9 Claims

1. In a process for removing SO_2 from a gas mixture in which said gas mixture is contacted under oxidizing conditions with a solid sorbent which is selective for the removal of SO_2 and in which said sorbent is regenerated with a reducing gas, the improvement wherein said reducing gas comprises an alcohol having from 1 to about 6 carbon atoms and wherein said sorbent is contacted with said alcohol at a temperature within the range of about 600° to about 1,000°F.

3,846,537

PROCESS OF PREPARING SILICA XEROGELS

Ralph Marotta, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 21, 1972, Ser. No. 282,641
Int. Cl. C01b 33/12
U.S. Cl. 423—338 9 Claims

1. A process of preparing an amorphous, pulverulent silica xerogel which comprises the steps of:

a. forming a silica sol by feeding, to an agitated aqueous heel, an alkali metal silicate solution and a mineral acid other than hydrofluoric acid, while maintaining a batch pH of less than about 4 and a batch temperature below about 70°C., the weight of silica added during this step (a) being from about 10 percent to about 45 percent of the total silica to be added during said process;

b. gelling said sol at a batch pH of about 4 or higher and a batch temperature of about 50°C. to 70°C., and interrupting the agitation for at least about 30 seconds;

c. resuming said agitation to disperse the gel;

d. introducing additional alkali metal silicate solution and acid while maintaining a batch pH of from about 4 to about 6.6 and a batch temperature of from about 75°C. to about 100°C.; and

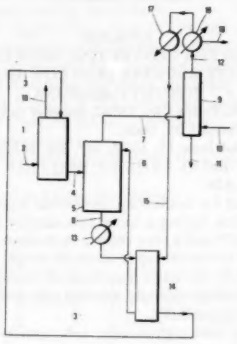
e. recovering the silica xerogel product.

3,846,538

PROCESS FOR REGENERATING STRONG BASES FROM SOLUTIONS OF THEIR SULFIDES AND SIMULTANEOUSLY PRODUCING SULFUR

Philippe Renault, Noisy-le-Roi; Claude Dezael, Maisons-Laffitte, and Andre Deschamps, Chatou, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Sept. 19, 1972, Ser. No. 290,406
Claims priority, application France, Sept. 27, 1971, 71.34749
Int. Cl. C01b 1/04, 17/04, 17/02
U.S. Cl. 423—183 15 Claims



1. A process for regenerating a strong base from an aqueous solution of a corresponding sulfide of said strong base, wherein (a) the aqueous solution of said sulfide is contacted with an ammonium salt of a strong inorganic acid or an organic acid less volatile than hydrogen sulfide, at such a temperature that hydrogen sulfide and ammonia evolve, so as to obtain an aqueous solution of the salt of the acid and the strong base; (b) the hydrogen sulfide and the ammonia obtained in the stage (a) are contacted with sulfurous anhydride for recovering sulfur and releasing, in a gaseous state, ammonia and water; (c) the solution of the salt of the acid and the strong base produced in the stage (a) is contacted with an anionic ion exchange resin in order to release the strong base and to enrich the resin with acid; (c) the contact with the resin is periodically interrupted and the latter is treated with an aqueous solution of ammonia issuing from stage (b), so as to regenerate the resin which, after regeneration, is contacted with the solution of the salt formed by the acid and the strong base; and (e) the product obtained when regenerating the resin, which consists of an aqueous solution of the ammonium salt of the acid, is fed back to stage (a).

3,846,539

PURIFICATION OF GAS CONTAINING SULFUR DIOXIDE OR SULFUR TRIOXIDE WITH THE PRODUCTION OF ELEMENTAL SULFUR

Philippe Renault, Noisy-le-Roi; Claude Dezael, Maisons-Laffitte, and Andre Deschamps, Chatou, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Oct. 10, 1972, Ser. No. 296,226
Claims priority, application France, Oct. 11, 1971, 71.36555
Int. Cl. C01b 17/02, 17/00
U.S. Cl. 423—574 21 Claims

1. A process for purifying a sulfur dioxide containing gas by means of an aqueous solution of sodium carbonate and with the production of elemental sulfur, comprising the steps of (a) contacting said gas with an aqueous solution of sodium car-

bonate so as to dissolve said sulfur dioxide in the form of sodium sulfite; (b) contacting the resulting solution with an aqueous solution of ammonium hydrogen carbonate or a gaseous mixture of carbon dioxide and ammonia so as to form a mixture of a sodium hydrogen carbonate precipitate and a liquid phase, separating said precipitate and heating it to form carbon dioxide and sodium carbonate, separating said carbon dioxide from said sodium carbonate, recycling said carbon dioxide to step (b) and said sodium carbonate to step (a); (c) reacting said liquid phase or its vaporization products with hydrogen sulfide to produce sulfur and release a NH_3 containing gas, separating the sulfur and recycling the NH_3 containing gas to step (b).

3,846,540

METHOD FOR CONVERTING HIGH-DENSITY LOW-POROSITY ALUMINA INTO LOW-DENSITY HIGH POROSITY ALUMINA

Bruce E. Leach, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 15, 1972, Ser. No. 263,050

Int. Cl. C01f 7/02; B01j 11/58

U.S. Cl. 423—628 **11 Claims**

1. A method for converting dispersible high density, low-porosity alumina, having a loose bulk density from about 42 to about 50 lb/ft^3 and a pore volume from about 0.40 to about 0.55 cc/g, and containing up to about 80 weight percent Al_2O_3 and produced by the water hydrolysis of aluminum alkoxides into low-density high porosity alumina said method consisting essentially of sequentially;

a. dispersing said high-density, low-porosity alumina in a mixture of water and an acid selected from the group consisting of hydrochloric acid, nitric acid, formic acid, acetic acid, propionic acid, monochloroacetic acid and dichloroacetic acid to form a dispersion containing up to about 18 weight percent Al_2O_3 and wherein said acid is present in an amount equal to from about 0.04 to about 0.12 mole per mole of Al_2O_3;

b. adjusting the pH of said dispersion to a value from about 7 to about 11 by the addition of an alkaline material, selected from the group consisting of ammonia, ammonium bicarbonate and ammonium carbonate, thereby precipitating alumina;

c. admixing an organic solvent selected from the group consisting of acetone, methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol and tertiary butanol with the products of the precipitation reaction in (b) to form a solvent-aqueous alumina mixture wherein said solvent is present in an amount sufficient to produce alumina having a loose bulk density from about 20 to about 30 lb/ft^3, a pore volume from about 0.70 to about 1.30 cc/g, and a surface area from about 200 to about 300 m^2/g; and

d. drying said mixture to produce low-density high porosity alumina having a loose bulk density from about 20 to about 30 lb/ft^3, a pore volume from about 0.70 to about 1.30 cc/g, and a surface area from about 200 to about 300 m^2/g.

3,846,541

TREATMENT OF HYPERCHOLESTEREMIA

Alan Norman Howard, Cambridge, England, assignor to Pharmacia A/B, Uppsala, Sweden

Continuation-in-part of Ser. No. 188,965, Oct. 13, 1971, abandoned. This application Mar. 20, 1973, Ser. No. 343,182

Claims priority, application Great Britain, Oct. 15, 1970, 49140/70

Int. Cl. A61k 27/00

U.S. Cl. 424—79 **12 Claims**

1. A method of treating patients suffering from hypercholesteremia which comprises the daily oral administration thereto of a hypocholesteremic effective amount of a composition comprising (a) a compound selected from the group consisting of para-chlorophenoxyisobutyric acid, the ethyl ester of said acid and salts of said acid with pharmacologically acceptable metals and (b) a pharmacologically acceptable grade of a solid non-toxic anion exchange resin in the weight ratio of 1:2 to 1:20, said resin being selected from the group consisting of (i) the solid copolymer of dextran and epichlorohydrin having from 10–35 percent of its weight of hydr(xyl groups, based upon the dry substance, from 6–50 percent of said hydroxyl groups having been replaced by groups of the formula RYO- in which Y is an alkylene group having at least one but less than three carbon atoms and R is a dialkylamino group having at least two but less than five carbon atoms, said copolymer having an ion exchange capacity of 2–6 milliequivalents per gram of dry compound (ii) the solid copolymer of tetraethylene pentamine and epichlorohydrin which has been brought to a pH of approximately 4 and then dried, and (iii) a solid styrene-divinylbenzene copolymer containing not more than 5 percent by weight of divinyl-benzene into which quaternary alkylammonium groups containing not more than 10 carbon atoms have been introduced, which copolymer has an equivalent weight, based upon the ammonium groups of less than 500, said anion exchange resins being administered in an overall daily amount of 3 to 50 grams.

3,846,542

ACRYLIC TOOTH-FILLING COMPOSITION CONTAINING BORIC ACID-RELEASING COMPOUND

Albert Gross, Frankfurt/Main, Germany, assignor to Kulzer & Co., GmbH, Bad Homburg, Germany

Continuation of Ser. No. 56,646, July 20, 1970, abandoned, and a continuation-in-part of Ser. No. 751,714, Aug. 12, 1968, abandoned. This application Jan. 4, 1972, Ser. No. 215,406

Int. Cl. A61k 5/00

U.S. Cl. 424—81 **3 Claims**

1. In a tooth-filling composition comprising a monomeric acrylic polymerizable liquid toxic to tooth pulp and suited for use in dental filling materials, and a Redox System curing agent, the improvement which comprises adding a boric acid alkyl ester, said compound being dissolved in said monomeric acrylic polymerizable liquid in a non toxic amount sufficient to protect the tooth pulp of a prepared tooth when using said toothfilling composition therein.

3,846,543

PROCESS FOR THE SEPARATION OF VIRUS FROM NON-VIRAL PROTEINS

Joseph E. Fields, Ballwin, and John H. Johnson, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 829,146, May 29, 1969, Pat. No. 3,655,509, which is a continuation-in-part of Ser. No. 777,409, Nov. 20, 1968, abandoned, which is a continuation-in-part of Ser. No. 590,127, Aug. 19, 1966, abandoned, which is a division of Ser. No. 440,991, March 18, 1965, abandoned, which is a continuation-in-part of Ser. No. 248,881, Jan. 2, 1963, abandoned. This application Aug. 2, 1971, Ser. No. 168,390

Int. Cl. C12k 5/00

U.S. Cl. 424—89 **15 Claims**

1. A method for the production f a virus vaccine comprising the steps of (1) preferentially sorbing a virus from an aqueous mixture of immunizing antigen virus particles and non-viral protein by contacting a water-soluble polyelectrolyte polymer, said polymer being polycationic or polyampholytic in nature, said polymer having a molecular weight of at least 1000 and being a copolymer of (a) a monoolefin having 2 to 12 carbon

atoms and (b) a member selected fromthe group consisting of maleic acid and maleic anhydride and containing 2–100 percent groups selected from the group consisting of diloweralkyl-aminoloweralkylimide groups and loweralkyliminodi (loweralkylimide) linkages, with the said mixture, with the polymer and pH conditions being such that the polymer has a greater sorptive power for the virus than the protein, (2) removing the said polymer bearing the sorbed virus from the mixture, (3) eluting the virus from the polymer, and after inactivation of the virus, (4)incorporating the virus of reduced contamination by non-viral protein with a pharmaceutically acceptable vaccine diluent or carrier, to contain an adequate concentration of immunizing antigens.

3,846,544
SPARINGLY-SOLUBLE KALLIKREIN-INACTIVATOR DERIVATIVE AND PROCESSES INVOLVING SAID DERIVATIVE

Fritz Schultz, Wuppertal-Sonnborn, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. Nos. 257,758, Feb. 11, 1963, abandoned, and Ser. No. 356,978, April 2, 1964, abandoned, and Ser. No. 607,670, Jan. 6, 1967, abandoned. This application May 19, 1970, Ser. No. 38,696

Int. Cl. A61k *17/00*

U.S. Cl. 424—95 **2 Claims**

1. A sparingly soluble reaction product of kallikrein-inactivator with metaphosphoric acid, said product being nontoxic and while in aqueous suspension non-dialyzable and slowly soluble when injected intramuscularly and having a percentage composition of its elements as follows:

Carbon	=	40.1
Hydrogen	=	5.8
Nitrogen	=	12.6
Oxygen	=	30.8
Sulfur	=	2.7
Phosphorus	=	6.1
Water	=	2.0

and having the infrared spectrum as shown in FIG. 1 of the drawing.

3,846,545
STABLE COPPER BASE FUNGICIDES

Earl H. Hess, Lancaster, Pa.; Daniel M. Kennedy, East Brunswick, N.J., and Charles I. Whitman, Garden City, N.Y., assignors to International Copper Research Association, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 579,550, Sept. 15, 1966, abandoned, and a continuation of Ser. No. 703,337, Feb. 6, 1968, abandoned. This application July 21, 1970, Ser. No. 64,031

Int. Cl. A01n *11/04*

U.S. Cl. 424—143 **9 Claims**

1. A stable Bordeaux mixture in powder form consisting of dehydrated copper base precipitates preponderantly in amorphous form of a freshly prepared aqueous interaction mixture of copper sulfate and calcium hydroxide, said powder Bordeaux mixture being capable of redispersing in water to form an aqueous spray mixture having fungicidal activity.

3,846,546
NEW EMULSIONS, AND COSMETIC PRODUCTS MADE FROM SUCH EMULSIONS

Felix Lachampt, Franconville; Andre Viout, Paris, and Guy Vanlerberghe, Mitrymory, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation-in-part of Ser. No. 688,994, Dec. 8, 1967, abandoned. This application July 13, 1971, Ser. No. 162,265

Claims priority, application Luxembourg, Dec. 8, 1966, 52534

Int. Cl. A01n *9/04, 17/10, 9/00*

U.S. Cl. 424—170 **11 Claims**

1. A cosmetic water-in-oil emulsion, which effectively penetrates the skin, consisting essentially of water, oil, and an emulsifying agent having the formula

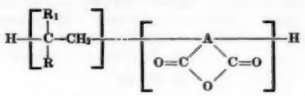
$$RO—C_2H_3O(R')—C_2H_3O(CH_2OH)—H$$

wherein R is selected from the group consisting of alkyl having 16–18 carbon atoms and hydrogenated lanolin alcohol residue, R′ is selected from the group consisting of $—CH_3$ and $—C_2H_5$, *m* is 3–5 and *n* is 2–3, and an emulsion stabilization agent selected from the group consisting of

a. magnesium isostearate,

b. an oil-soluble copolymer selected from the group consisting of

i. a copolymer having the formula

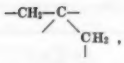


I II

wherein A is selected from the group consisting of

(1)

and

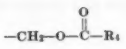
(2) 

where R_2 is selected from the group consisting of hydrogen and methyl, and

R is selected from the group consisting of

3. alkyl having 8–18 carbon atoms,

4. $—O—R_3$ wherein R_3 is alkyl having 16 carbon atoms and

5. 

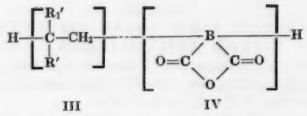
wherein R_4 is alkyl having 11–17 carbon atoms,

with the proviso that when R is one of (3) and (4), R_1 is hydrogen and that when R is (5), R_1 is selected from the group consisting of hydrogen and methyl,

the molar ratio of monomeric units I:II is 1:1 and said copolymer has a molecular weight ranging between 4,000 – 100,000,

ii. the magnesium salt of the copolymer of (i),

iii. a copolymer having the formula

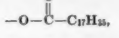


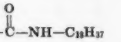
III IV

wherein B is

wherein R'_2 is selected from the group consisting of hydrogen and methyl, and

R′ is selected from the group consisting of

6. 

7. 

and

8.

wherein R'_3 is alkyl having 12–18 carbon atoms,

with the proviso that when R′ is one of (6) and (7), R'_1 is hydrogen and that when R′ is (8), R'_1 is methyl, the molar ratio of monomeric units III:IV ranges between 1-1.4:0.5-1 and said copolymer has a molecular weight ranging between 4,000–100,000 and

iv. the magnesium salt of the copolymer of (iii), and

c. a mixture of (a) and (b), the amount of said emulsifying agent and emulsion stabilization agent in combination ranging between 8.5–20 weight percent of said composition, said oil being present in amounts ranging between about 22–45 weight percent of said composition, the remainder comprising essentially water.

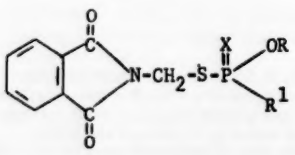
3,846,547

STABILIZED AQUEOUS SUSPENSION OF PHTHALIMIDOMETHYL MONO THIO-OR DITHIO-PHOSPHATES OR PHOSPHONATES

Ashley Herman Freiberg, Santa Clara, Calif., and David James Broadbent, Racine, Wis., assignors to Stauffer Chemical Company, New York, N.Y.

Filed July 18, 1972, Ser. No. 272,818
Int. Cl. A01n 9/36
U.S. Cl. 424—200 **2 Claims**

1. A stable insecticidal composition comprising an insecticidally effective amount of a compound of the formula



wherein X is oxygen or sulfur, R is alkyl having 1 to 4 carbon atoms and R^1 is alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms, water and phosphoric acid in an amount of 0.01 to 0.5 percent by weight of water.

3,846,548

AQUEOUS DOXYCYCLINE COMPOSITIONS

Yoshinobu Akazawa, Chitagun; Masami Yagyu, Nagoyashi; Shigenori Nozawa, and Satoshi Yasui, both of Chitagun, all of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed July 19, 1972, Ser. No. 273,208
Claims priority, application Japan, July 19, 1971, 46-53146
Int. Cl. A61k 21/00
U.S. Cl. 424—227 **3 Claims**

1. A stable aqueous composition which comprises doxycycline; water; a magnesium compound selected from the group consisting of magnesium chloride, magnesium ascorbate, magnesium lactate and magnesium gluconate; and a nonionic surface active agent selected from the group consisting of a polyoxyethylene hydrogenated castor oil derivative and a polyoxyethylene derivative of a partial ester of lauric acid, palmitic acid, stearic acid, or oleic acid and a hexitol anhydride derived from sorbitol; the doxycycline concentration being about 20–40 mg/ml of said composition; the molar ratio of magnesium compound to doxycycline being about 1:1 – 8:1; the concentration of nonionic surface active agent being less than 20 percent but not less than 7.5 percent w/v; said composition having a final pH of 5.0 to 7.0.

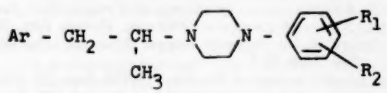
3,846,549

PHARMACEUTICAL COMPOSITIONS CONTAINING AN N-(1-BICYCLIC ARYL-PROPYL -2)-N-PHENYL-PIPERAZINE

Anton Mentrup; Karl Zeile; Peter Danneberg; Kurt Schromm, all of Ingelheim/Rhine; Jeanette Guenard, Mainz; Ernst-Otto Renth, and Harry Stotzer, both of Ingelheim/Rhine, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Continuation-in-part of Ser. No. 312,339, Dec. 5, 1972, abandoned, which is a division of Ser. No. 110,766, Jan. 8, 1971, Pat. No. 3,729,474, which is a continuation of Ser. No. 663,973, Aug. 29, 1967, abandoned, and a continuation-in-part of Ser. No. 274,903, July 25, 1972, abandoned. This application July 5, 1973, Ser. No. 376,910
Claims priority, application Germany, Aug. 1, 1967, 93758; Sept. 3, 1966, 88772; July 23, 1971, 2136929
Int. Cl. A61k 27/00
U.S. Cl. 424—250 **18 Claims**

1. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective CNS-depressing amount or an effective antihypercholesteremic amount of a racemic or optically active compound of the formula



wherein Ar is 3,4-methylenedioxy-phenyl, indanyl, naphthyl or 1,4-benzodioxanyl, and

R_1 and R_2 are each hydrogen, halogen, amino, acetylamino, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylcarbonyl of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,846,550

COSMETIC SKIN POWDER CONTAINING UREA

Harold S. Akrongold, and Rochelle Akrongold, both of 39 Cathay Rd., East Rockaway, L.I., N.Y. 11101

Continuation-in-part of Ser. No. 108,616, Jan. 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 809,042, March 20, 1969, abandoned. This application Dec. 18, 1972, Ser. No. 315,883

Int. Cl. A61k 7/02

U.S. Cl. 424—63 3 Claims

1. A cosmetic skin care powder composition consisting essentially of a precipitate formed by the reaction of about 0.1–74.9 percent by weight of urea in solution, about 0.1–60 percent by weight of an oil phase and about 0.1–99.5 percent by weight of an inorganic pigment, said urea solution and said oil phase being agitated in the presence of alcohol until a clear solution is obtained prior to admixture with the oil phase, said oil phase being selected from the group consisting of mineral oil, lanolin, lanolin alcohol, vegetable oil, silicon fluids, kerosene, polyalkylene glycol, saturated and unsaturated straight or branched chain fatty acids and dimer acids having between five and 52 carbon atoms, fatty alcohols and dimer alcohols having between five and 52 carbon atoms, esters of said fatty acids, and mixtures thereof.

3,846,551

INSECTICIDAL AND ACARICIDAL COMPOSITION AND PROCESS FOR CONTROLLING PESTS

Akira Mifune, Tokyo; Yoshio Katsuda, Nishinomiya, and Toyoaki Yoneda, Tokyo, all of Japan, assignors to Teijin Limited and Dai Nihon Jochugiku Co. Ltd., both of Osaka, Japan

Filed Nov. 16, 1973, Ser. No. 416,666

Claims priority, application Japan, Nov. 20, 1972, 47-115678

Int. Cl. A01n 9/00, 9/28

U.S. Cl. 424—180 5 Claims

1. An insecticidal and acaricidal composition comprising a pesticidal amount of an interacted compound of a pyrethroid with a cyclodextrin and a diluent or carrier.

3,846,552

INSECTICIDAL COMPOSITIONS AND METHODS OF KILLING INSECTS USING N-ALLYL PHOSPHOROTHIOAMIDATES

Masachika Hirano, Minoo; Kunio Mukai, Nishinomiya; Hisami Takeda, and Katsutoshi Tanaka, both of Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

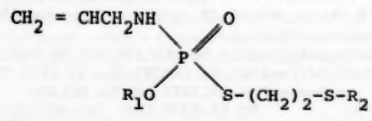
Division of Ser. No. 197,923, Nov. 11, 1971, Pat. No. 3,786,118. This application Sept. 19, 1973, Ser. No. 398,851

Claims priority, application Japan, Dec. 17, 1970, 45-114365

Int. Cl. A01n 9/20, 9/36

U.S. Cl. 424—216 2 Claims

1. An insecticidal composition which comprises as an active ingredient an insecticidally effective amount of a phosphorothioamidate of the formula,



wherein R_1 is methyl or ethyl, and R_2 is an alkyl having 1 to 4 carbon atoms, and an inert carrier.

3,846,553

3-SUBSTITUTED-2-PYRIDONES IN THE TREATMENT OF PAIN, FEVER OR INFLAMMATION

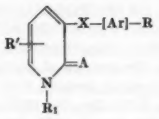
Tsung-Ying Shen; Gordon L. Walford, and Bruce E. Witzel, all of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 881,922, Dec. 3, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 172,319

Int. Cl. A61k 27/00

U.S. Cl. 424—263 8 Claims

1. A method of treating a disease exhibiting the symptoms of pain, fever or inflammation in a human or animal which comprises the administration of about 0.5 mg./kg. to about 70 mg./kg. per day in dosage unit form of a compound of the formula:



where

A is O or S;

Ar is phenyl;

R is hydrogen, loweralkyl, halogen, hydroxy, loweralkoxy, halologeralkyl, phenyl, naphthyl, nitro, amino, acetylamino, loweralkylamino or diloweralkylamino;

R′ is hydrogen or loweralkyl;

X is

—CH—

—CH_2—CH_2—

—CH=CH— or

—C C—; and

R_1 is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, phenyl loweralkyl, phenyl, hydroxyloweralkyl, aminoloweralkyl, or diloweralkylamino-loweralkyl; or a nontoxic pharmaceutically acceptable salt.

3,846,554

DETERGENT COMPOSITIONS EXHIBITING REDUCED SKIN IRRITATION AND METHOD OF REDUCING DETERGENT IRRITATION

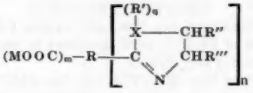
Walter E. Rieder, Terrace Park, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 15, 1972, Ser. No. 315,285

Int. Cl. A61k 27/00

U.S. Cl. 424—272 24 Claims

1. A detergent composition consisting essentially of a skin irritating detergent and a skin irritation reducing effective amount of a compatible protective agent having the formula



in which

R is the carboxyl-free residue of an aromatic, cycloaliphatic or aralkyl di-, tri- or tetra-carboxylic acid in which the aromatic, cycloaliphatic or aralkyl group is a C_6 cyclic group and in which the carboxyl groups are attached to the C_6 cyclic group, directly or through $—CH_2—$ radicals; the carboxyl-free residue of the unsaturated polycarboxylic acid product obtained by the polymerization of two to four molecules of a monomeric ethylenically unsaturated C_{12} to C_{26} fatty acid; or the carboxyl-free residue of

the hydrogenated derivative of said unsaturated polycarboxylic acid product;

R′ is hydrogen, hydroxyl, C_1—C_6—alkyl, or C_1—C_6-alkyl substituted with hydroxyl or amine;

R″ and R‴ are hydrogen or C_1—C_6-alkyl;

X is oxygen or nitrogen;

M is H, or a cation;

m is 0, 1 or 2;

n is 1, 2, 3, or 4;

$n+m$ is 2, 3, or 4;

q is 0 when X is oxygen and q is 1 when X is nitrogen; said detergent composition enhibiting reduced skin irritation relative to the said detergent composition absent the protective agent.

3,846,555
CONTROL OF MICROORGANISMS WITH O,N-DIPHENYLCARBAMIC ACID ESTERS

Walter Traber, Riehen; Heinz Hambock, Binningen, and Anton Georg Weiss, Benken, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

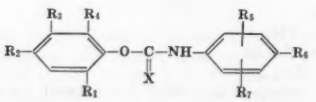
Division of Ser. No. 5,954, Jan. 26, 1970, Pat. No. 3,721,699. This application Jan. 2, 1973, Ser. No. 320,388

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—300 **23 Claims**

1. A composition for controlling bacteria and fungi and for protecting organic material against attack by bacteria and fungi which comprises

(1) a bactericially or fungicidially effective amount of an O,N-diphenylcarbamic acid ester of the formula



R_1 represents phenoxy substituted by from 1 to 3 identical or different halogen atoms selected from the group consisting of fluorine, chlorine and bromine,

one of R_2, R_3 and Rrepresents chlorine or bromine, and each of the others of R_2, R_3 and R_4 represents hydrogen, chlorine or bromine,

each of R_5 and R_7 represents hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy, halogeno-lower alkyl, nitro or hydroxy,

R_6 represents hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy, di-lower alkylamino or hydroxy, and X represents oxygen or sulfur

and (2) a carrier compatible with said ester.

3,846,556
WATER-IN-OIL EMULSIONS, COSMETIC PRODUCTS MADE THEREFROM AND METHOD OF MAKING SAID COSMETIC PRODUCTS

Rose-Marie Handjani nee Vila, and Arlette Zabotto nee Arribau, both of Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Mar. 21, 1972, Ser. No. 236,785

Claims priority, application Luxembourg, Mar. 29, 1971, 62873

Int. Cl. A61k *27/00*

U.S. Cl. 424—364 **6 Claims**

1. A water-in-oil emulsion for use in the preparation of cosmetic compositions consisting essentially of a discontinuous aqueous internal phase, a continuous oil external phase and an emulsifying agent to emulsify said aqueous internal phase and said external oil phase, said emulsifying agent being a mixture of (a) a lanolate selected from the group consisting of magnesium lanolate, aluminum lanolate, lithium lanolate, zinc lanolate and calcium lanolate and (b) a member selected from the group consisting of hydrogenated lanolin, lanolin alcohol, and mixtures thereof, the weight ratio of (a) : (b) being between 80—10:20—90, said emulsifying agent being present in amounts of 3–50 percent by weight of said emulsion, the weight ratio of said continuous oil external phase to said emulsifying agent being between 95—20:5—80 and said aqueous internal phase being present in amounts of 5–70 percent by weight of said emulsion.

3,846,557
BAIT FOR SYNANTHROPIC FLIES AND METHOD FOR MAKING SAME

Mir S. Mulla, and Yih-Shen Hwang, both of Riverside, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed May 26, 1972, Ser. No. 257,315

Int. Cl. A01n *1/02*

U.S. Cl. 426—1 **7 Claims**

1. A method for attracting synanthropic flies and ants which comprises placing a solid and dry bait on a substrate in contact with the air and in an environment having an available moisture content of at least 10 percent by weight and leaving said bait on said substrate and in contact with said air and said environment whereby there is evolution of a gas attractant which is attractive to synanthropic flies and ants, said bait consisting essentially of a dry solid fermented protein composition from which substantially all of the water was removed while said composition was frozen, said freezing taking place when said protein was evolving an attractant gas.

3,846,558
METHOD FOR CONVERTING ANIMAL WASTE PRODUCTS INTO A FOOD SUPPLEMENT

Roger H. Stevens, New York, N.Y., assignor to International Farm Systems, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 829,194, Nov. 24, 1969, Pat. No. 3,633,547. This application Dec. 22, 1970, Ser. No. 100,587

Int. Cl. A23k *1/00*

U.S. Cl. 426—2 **16 Claims**

1. A method of increasing the weight of a group of swine which comprises:

forming a slurry of solid and liquid waste products of said swine and a yeast capable of assimilating nitrogen from urea, said slurry containing from 1 to 25 percent of said solid waste;

aerating and agitating said slurry while maintaining its temperature at about 75° to 95°F and its pH at about 4 to 6.5 for a period of time sufficient to effectuate a fermentation process and which produces a swine feed supplement by converting the nitrogen in said waste to a high protein product containing increased amino acids in an amount over that in the raw product and

feeding said swine feed supplement to said swine.

3,846,559
METHOD FOR CONVERTING ANIMAL WASTE PRODUCTS INTO A FOOD SUPPLEMENT

Roger H. Stevens, Streator, Ill., assignor to International Farm Systems, Inc., Streator, Ill.

Continuation-in-part of Ser. Nos. 879,194, Nov. 26, 1969, Pat. No. 3,633,547, and Ser. No. 100,587, Dec. 22, 1970. This application Nov. 30, 1971, Ser. No. 203,249

Int. Cl. A23k *1/00*

U.S. Cl. 426—2 **6 Claims**

1. A method of increasing the weight of a group of swine which comprises:

forming a slurry of solid and liquid waste products of said swine and a yeast,

aerating and agitating said slurry while maintaining its temperature at about 75° to 95°F and its pH at about 4 to 7 until the urea content of the slurry has been substantially eliminated, thereby producing a slurry useful as a swine feed supplement

heating said slurry at a temperature between about 140° – 200°F for a period of time to inactivate a substantial portion of enteric flora therein and to improve the digestability of said supplement, and

feeding said swine feed supplement to said swine.

3,846,560

PROCESS OF MAKING A BASE FOR PROTEIN BEVERAGES

Walter L. Hempenius, Maryland Heights; Joseph Valenti, St. Louis, both of Mo., and Robert E. Moser, Mentor, Ohio, assignors to Quaker Oats Company, Barrington, Ill.

Filed July 22, 1971, Ser. No. 165,338
Int. Cl. A23l *1/00*

U.S. Cl. 426—18 **9 Claims**

1. A process of making an acidic, aqueous solution of polypeptides for use as a base in preparing an acidic, protein beverage, comprising (a) heating an aqueous slurry of a defatted protein selected from the group consisting of soya, cotton or corn seeds at a temperature of from about 150° to 375°F. for a time sufficient to increase the yield of a soluble, nutritional, polypeptide product which is produced when the heated slurry is subsequently subjected to enzymatic hydrolysis, but insufficient to deleteriously affect the flavor of said polypeptide product, (b) subjecting the resulting slurry to enzymatic hydrolyis conditions including the action of a proteolytic enzyme to produce polypeptides, (c) adjusting the pH of the resulting slurry to within the range of from about 2.5 to 6.0, and (d) removing precipitated material from the slurry to leave a clear, acidic solution of polypeptides suitable for use as a base in preparing an acidic, protein beverage.

3,846,561

YOGURT-CONTAINING DOUGH COMPOSITION AND BAKED PRODUCT MADE THEREFROM

Larry G. Hill, 5110 N.E. 17 Ave., Ft. Lauderdale, Fla. 33308

Filed Aug. 7, 1972, Ser. No. 278,207
Int. Cl. A21d *2/34, 13/04*

U.S. Cl. 426—19 **10 Claims**

1. A bread dough composition consisting essentially of flour, water, yeast and yogurt, said yogurt being present in said bread dough composition in an amount in the range from about 0.5 to about 20.0 percent by weight based on the flour content of said dough composition.

3,846,562

PROCESS FOR THE TREATMENT OF COCONUT

John H. Forkner, Fresno, Calif., assignor to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 74,310, Sept. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 866,452, Oct. 15, 1969, abandoned. This application Aug. 19, 1971, Ser. No. 173,106
Int. Cl. A23l *1/36*

U.S. Cl. 426—44 **10 Claims**

1. In a process for the treatment of coconut meat, the step of subjecting hydrated coconut meat in particulate form to fermentation of the presence of bakers yeast as a fermenting medium to tenderize the meat.

3,846,563

QUICK-COOKING MACARONI PRODUCTS AND PROCESS

Thomas A. Cunningham, Cresskill, N.J., assignor to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 242,800, April 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 143,271, May 13, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,105
Int. Cl. A23l *1/16*

U.S. Cl. 426—158 **17 Claims**

1. A method for preparing quick cooking macaroni products which comprises the steps of:

a. combining a dry, at least partially precooked wheat flour, having from 20 percent to about 60 percent gelatinization, with water and other optional dough ingredients to form a manageable dough, the precooked flour being present at a level sufficient to provide cohesiveness in the dough to permit proper handling characteristics during the forming operation, while at the same time insuring a macaroni product which will rehydrate in less than a minute and a half following the addition thereto of boiling water;

b. forming the dough into pieces of the desired configuration; and

c. drying the dough pieces.

3,846,564

EDIBLE MIXTURE

Denis J. Malin, 13 Brandville Gardens, Essex, England

Filed Sept. 12, 1972, Ser. No. 288,284
Int. Cl. A23l *1/31*

U.S. Cl. 426—212 **17 Claims**

1. An edible mixture including textured protein mixed with an amount of comminuted animal glandular tissue sufficient to mask the flavor of the protein.

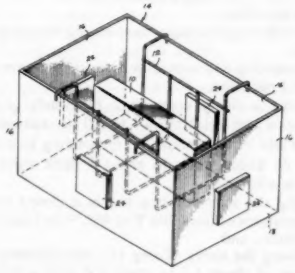
3,846,565

METHOD OF HEATING FROZEN FOOD USING SONIC OR ULTRASONIC WAVE ENERGY

Robert B. Rosenberg, Hinsdale; John D. Nesbitt, and Mark E. Fejer, both of Chicago, all of Ill., assignors to South Bend Range Corporation, South Bend, Ind.

Filed Aug. 3, 1972, Ser. No. 277,647
Int. Cl. A23l *3/56*

U.S. Cl. 426—238 **8 Claims**



1. A method of heating a frozen food comprising the steps:

a. providing a heated medium;

b. exposing said food to said heated medium; and

c. directing vibratory wave energy in the sonic or ultrasonic range through said heated medium and against said food to assist said heated medium in reheating said food to an elevated temperature.

3,846,566

PROCESS FOR INCREASING THE NATURAL COLOR INTENSITY OF SEAFOODS

Ralph Blomstrom, P. O. Box 8958, 402 74 Goteborg, Sweden

Continuation-in-part of Ser. No. 205,301, Dec. 6, 1971, abandoned. This application July 9, 1973, Ser. No. 377,517

Int. Cl. A22c *29/00*

U.S. Cl. 426—250 12 Claims

1. A method for enhancing the intensity of the natural color of crustaceans which comprises contacting the seafood with a solution of canthaxanthin or apo-carotenal at an elevated temperature above about 50°C and for a time sufficient to deposit upon said seafood at least about 0.001 parts of canthaxanthin or apo-carotenal per part of seafood.

3,846,567

VEGETABLE PRODUCT COATED WITH PROPIONIC ACID IMPREGNATED PARTICULATE MATERIAL

Jakab Matyas; Istvan Petroczy; Eva Somfai, and Agoston David, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Jan. 27, 1972, Ser. No. 221,376

Claims priority, application Hungary, Jan. 27, 1971, MA 2188

Int. Cl. B65b *55/009*

U.S. Cl. 426—289 5 Claims

1. A process for treating a vegetable product with vapors of propionic acid having a vapor pressure of 10 to 100 mm Hg at ambient temperature, comprising the steps of:

a. intimately mixing the propionic acid with a finely divided particulate solid selected from the group which consists of dispergent oxides, activated charcoal, perlite, plastic powders, bentonite or peat amorphous or microcrystalline to X-rays and of a particle size under 10 microns to produce a powder containing 50 to 95 percent of the propionic acid; and

b. contacting said vegetable product with said powder.

3,846,568

PREPARATION OF MEAT FLAVOR CONCENTRATES FROM HEAT-TREATED SLURRIED MEAT, WATER, AND ASCORBIC ACID

Alexander Leon Liepa, Cincinnati, and David Evans O'Connor, Greenhills, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 1, 1972, Ser. No. 248,993

Int. Cl. A23l *1/26*

U.S. Cl. 426—364 10 Claims

1. A process of preparing a meat analog flavoring substance comprising

a. comminuting any natural meat source to provide finely divided particles;

b. forming a slurry comprising the finely ground meat source of step (a), from 0.1 to 2.0 percent ascorbic acid and water in an amount corresponding to the range of from no added water to about 5 parts water to 1 part protein source,

c. heating the slurry of step (b) in a closed container at temperatures of from 200°F to 400°F for from 30 seconds to 5 hours; and

d. removing the slurry of step (c) and adjusting the pH to a range of about 4.5 to about 8.0 with a basic material selected from the group consisting of sodium hydroxide, potassium hydroxide, or calcium hydroxide; and

e. separating the liquid phase of step (d) and diluting said liquid phase with water to within the range of about 1 part concentrate to 10 parts water to about 1 part concentrate to 100 parts water; and

f. adding the dilute liquid phase of step (e) to meat analogs in concentrations of from 1.0 to 5.0 percent.

3,846,569

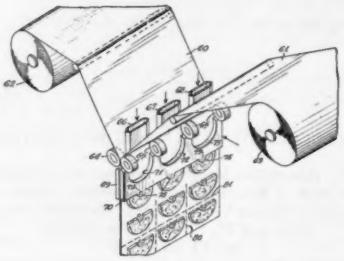
METHOD OF MAKING A DISPOSABLE PRECHARGED COFFEE BAG

Reuben A. Kaplan, c/o Owatanna Tool Company, Owatonna, Minn. 55060

Continuation of Ser. No. 114,149, Feb. 10, 1971, abandoned, which is a continuation of Ser. No. 881,053, Dec. 1, 1969, abandoned. This application Oct. 6, 1972, Ser. No. 295,473

Int. Cl. B65b *29/02*

U.S. Cl. 426—394 1 Claim



1. The method of making a disposable semiannular precharged coffee bag of porous sealable paper or the like comprising, feeding a pair of web sections of said paper into face-to-face relation and at opposite sides of a downwardly-depending coffee charging chute, a first sealing step of sealing said pair of web sections together across their width including a semicircular concave sealing line to leave an upwardly-open pocket immediately beneath the discharge end of said chute with a filling opening the full width of the pocket, charging said pocket through the full width opening with a charge of ground coffee issuing from the discharge end of said chute to partially fill the pocket, sealing said web sections together along a generally straight line above the level of the coffee in said pocket to close off said pocket and form a sealed band of said web sections and at the same time perform said first sealing step for the next of said upwardly-open pockets, forming an extension of said sealed band extending into said pocket and forming a hole therein to fit the riser of a percolator with a portion of said band extending outwardly beyond said hole in order to overlap with another similar coffee bag, and moving said web sections a short distance to move the newly-formed pocket a distance to position the full width opening beneath the discharge end of said chute.

3,846,570

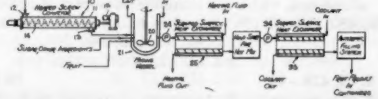
PREPARATION OF FRUIT COMPOSITIONS

Walter Vetter, Meggen; Hanspeter Mueller, Emmenbruecke, and Theodor Geissman, Reinach, all of Switzerland, assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,002

Int. Cl. A23c *3/00*

U.S. Cl. 426—399 11 Claims



1. A process for preparing fruit compositions suitable for addition to milk products while retaining the characteristic

texture, structure, taste and color of fruit in the compositions which comprises: (a) mixing fruit with one or more fruit adjuvants while heating said mixture to form a substantially homogenous mixture, (b) passing said mixture through a scraped surface heat exchanger while turning the mixture over to rapidly thermally pasteurize the mixture without substantial degradation of the fruit composition or significant disintegration of fruit particles, (c) rapidly cooling said mixture to room or ambient temperature by passing said mixture through a second scraped surface heat exchanger, and (d) filling said mixture into a container under aseptic conditions.

3,846,571

PROCESS OF TREATMENT OF SMOKED-AND-DRIED MEAT

Oleg Alexandrovich Kremnev, ulitsa Vladinirskaya, 51-53, kv. 12; Vladimir Rudolfovich Borovsky, ulitsa Pimoenko, 20, kv. 12; Sergei Semenovich Kravets, ulitsa Kultury, 20, kv. 14, all of Kiev; Nikolai Fedorovich Alexeev, Balshay Dorogamilovskaya, 60, kv. 32, Moscow; Vladislav Arkhipovich Tsvetkov, Volzhsky bulvar, 34, Kv. 36, and Vladimir Borisovich Bogdanovsky, ulitsa Menikova, 17, kv. 43, Moscow, all of U.S.S.R.

Filed Mar. 2, 1972, Ser. No. 231,423
Int. Cl. A23l *1/31*

U.S. Cl. 426—415 **1 Claim**

1. A method for drying a smoked meat product while avoiding over-drying of the surface of said product comprising the steps of enclosing said product in an envelope of a paper material and exposing the enclosed product to a current of air having a temperature of 20°C. to 40°C. and flowing at a rate of 1 to 5 m/sec, whereby the product is dried in about 6–8 days.

3,846,572

REDUCING OIL CONTENT OF FRIED POTATOES BY IMMERSING IN OIL-FREE DIFLUORODICHLOROMETHANE

Masahide Nonaka, Moraga; Earl Hautala, Richmond, and Merle L. Weaver, Martinez, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 18, 1971, Ser. No. 190,007
Int. Cl. A23l *1/12*

U.S. Cl. 426—429 **1 Claim**

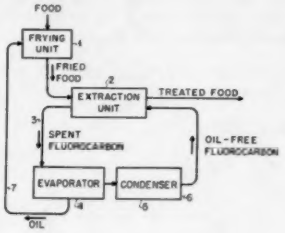
1. A process for preparing fried potato products of decreased oil content, which consists of

a. cutting peeled potatoes into strips,

b. imparting a surface freeze to the strips by immersing them for 11 seconds in difluorodichloromethane at −21.6° F.,

c. leaching the strips in water at 125° F. for 20 minutes,

d. par-frying the strips in oil at 323° F. for 1 minute, and



e. immersing the strips with agitation in oil-free difluorodichloromethane at −21.6° F. for 1 to 2 minutes.

3,846,573

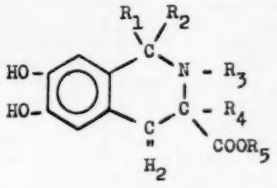
METHOD OF STABILIZING ORGANIC COMPOUNDS AGAINST OXIDATION WITH ISOQUINOLINE DERIVATIVES

Shinji Okumura, Tokyo; Shito Takeshita, Kawasaki; Hitoshi Enei, Zushi, and Sadayoshi Ninagawa, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,206
Claims priority, application Japan, Aug. 22, 1972, 47-83861
Int. Cl. A23d *5/04*

U.S. Cl. 426—182 **8 Claims**

1. A method of protecting an organic material against oxidation which comprises mixing said material with an isoquinoline derivative of the formula



wherein R_1 is hydrogen or lower alkyl; R_2 is hydrogen, lower alkyl, carboxy or carbo-alkoxy, said alkoxy having up to 24 carbon atoms; R_3 is hydrogen, or R_2 and R_3 jointly constitute a second carbon-to-nitrogen bond; R_4 is hydrogen or lower alkyl; and R_5 is hydrogen, alkali metal or alkyl having up to 24 carbon atoms;

said organic material being an oil, fat or wax of animal, vegetal, or mineral origin, rubber, or sythetic resin, and sensitive to oxidation by atmospheric oxygen, and the amount of said derivative being sufficient to retard said oxidation.

ELECTRICAL

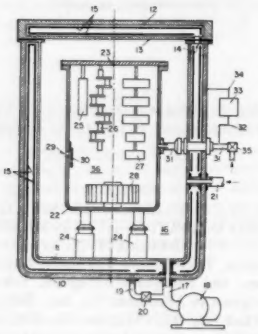
3,846,574
METHOD OF HEATING OBJECTS AND DEVICE FOR THE PERFORMANCE OF THE METHOD

Horst Edmund Rordorf, 8104 Weiningen, Ifang, 12, Switzerland

Division of Ser. No. 154;127, June 17, 1970, abandoned. This application July 9, 1973, Ser. No. 377,539

Int. Cl. H05b 7/16

U.S. Cl. 13—31 **7 Claims**



1. An apparatus for heating objects within a furnace comprising:

a metallic furnace arranged within and electrically insulated from a metallic chamber provided with a gas pipe leading into said chamber and connected to a pump and a gas supply pipe for maintaining a gas atmosphere of a predetermined pressure in the interior of said chamber;

a current source connected, as one terminal, to said chamber and, as its other terminal, to a current lead-in insulated from the metallic walls of said chamber and contacting said furnace for maintaining an electric glow discharge between said chamber and furnace with the inner wall of said chamber and the outer side of said furnace as electrodes; and

at least one separate gas supply pipe communicating with the interior of the said furnace and sealed against the interior of the said chamber for maintaining a desired gas atmosphere within said furnace.

3,846,575
CABLE SHEATH AND READY ACCESS CLOSURE INCLUDING A CABLE SHEATH

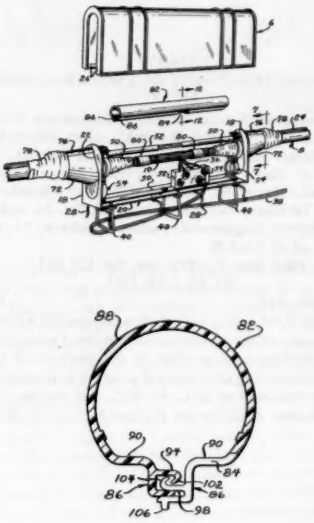
Michael K. Troy, Elmhurst, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed July 16, 1973, Ser. No. 379,792

Int. Cl. H02g 7/06, 3/04

U.S. Cl. 174—41 **9 Claims**

1. A ready access closure for a communications cable having a plurality of insulated wires and a metallic grounding shield surrounding said wires, said cable being supported by a messenger, said closure comprising a base assembly having opposed ends and a member joined to said ends and extending therebetween, said ends having openings receiving the cable, said metallic grounding shield being interrupted between said ends, means including electrically conductive clamps adjacent to said ends and secured to said member, an electrically conductive strap on said member and being in conductive connection with said clamps, said clamps being secured to said messenger and to said metallic grounding shield, at least one terminal block on said strap and having conductive terminals, a group of wires from said cable being connected to said terminals, said group of wires being less than all of the wires of said cable, a cable sheath constituting a closure over said cable, said sheath lying between said clamps and having adjacent longitudinal margins that define a lateral opening into the sheath and through which the cable may pass upon mounting



the sheath onto the cable, said longitudinal margins having cooperating means for snap-fitting engagement to close said sheath and inhibit ready separation of said margins, said sheath also having a notch that forms an additional lateral opening and through which said group of wires projects, the notch being of such size that the remaining wires of the cable are substantially inaccessible for connection to said terminal block, and a removable cover cooperating with said base assembly substantially enclosing the sheath-covered cable and said terminal block.

3,846,576
PARTITION WITH OPENINGS FOR PLUGGING THROUGH VOLTAGE-CARRYING CONTACTS

Erich Silbermann, Bubenreuth, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Apr. 11, 1973, Ser. No. 350,045

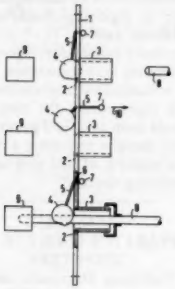
Claims priority, application Germany, Apr. 20, 1972, 2219432

Int. Cl. H01r 13/44

U.S. Cl. 174—67 **7 Claims**

1. In a switching installation wherein an insulating partition is placed between a bus bar space and a circuit breaker space, the partition having holes therein through which circuit breaker contacts may pass to plug into mating contacts in the bus bar space, apparatus to close off the holes when a circuit breaker is removed, comprising, for at least one hole in the panel, a spherical member vertically suspended, by means attached above the hole, said means permitting movement of

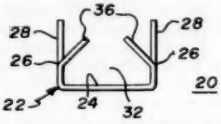
said spherical member in at least one direction, to lie opposite the hole on the bus side, whereby a circuit breaker contact being inserted through the hole will push said spherical member out of its way and retraction of the circuit breaker contact will allow said spherical member to rest against the hole closing it off.



3,846,577
ELECTRICAL SPLICE

Ted L. C. Kuo, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed July 10, 1973, Ser. No. 377,949
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **1 Claim**



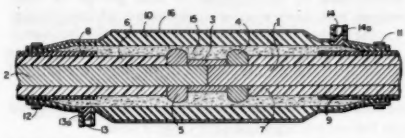
1. An electrical splice comprising: a body member having a base portion extending the length of said body portion, a first compartment including a first given length of said base portion and a pair of first sidewalls, and a second compartment including the remaining length of said base portion and a pair of second sidewalls foldable independently of said pair of first sidewalls; said pair of first sidewalls being selectively folded inwardly towards one another to provide an overhanging portion disposed at an angle generally oblique to the plane of said base portion so that the interior opening formed by said base portion and said pair of first sidewalls is selectively smaller than the interior opening formed by said base portion and said pair of second sidewalls, to restrict the acceptance of said first compartment to a first given sized conductor selectively smaller than a second given sized conductor acceptable within said second compartment.

3,846,578
SPLICE FOR ELECTRIC CABLES

George Bahder, Suffern, and Felipe G. Garcia, New City, both of N.Y., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Mar. 22, 1972, Ser. No. 237,018
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 R **8 Claims**

1. In combination with a pair of axially aligned cables each having a central conductor and a surrounding insulating layer, said layers being cut back to expose opposing end portions of the conductors, a cable splice comprising a coupling member mechanically and electrically interconnecting said conductor end portions and coaxial therewith, insulating means forming a substantially closed annular chamber extending around said coupling member and insulating layers and having a filler inlet and an air outlet, said inlet and outlet being closed, said means

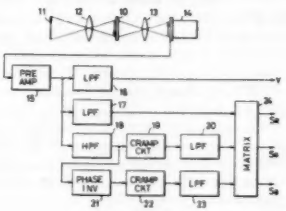


including an insulating sleeve having integral portions surrounding said member and layers in spaced relation thereto, said sleeve having high dielectric properties and constituting the main electrical insulation of the splice, and a material of high dielectric constant filling said chamber.

3,846,579
COLOR TELEVISION SIGNAL GENERATING APPARATUS

Itsuo Takanashi; Tadayoshi Miyoshi, both of Yokohama; Koji Uesaka, Tokyo; Kenichi Miyazaki, Sagamihara, and Sumio Yokokawa, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama City, Kanagawa-ken, Japan

Filed May 31, 1973, Ser. No. 365,581
Claims priority, application Japan, June 3, 1972, 41-55230; June 20, 1972, 47-61531; Aug. 20, 1972, 47-83158; Mar. 23, 1973, 48-33246
Int. Cl. H04n *9/06*
U.S. Cl. 358—47 **9 Claims**



1. A color television signal generating apparatus comprising:

a color-resolving striped filter comprising a plurality of groups of filter stripes, said groups being disposed parallelly and consecutively in sequentially repeated arrangement each of said groups comprising at least three filter stripes from among

a first filter stripe having a light transmission characteristic such as to transmit the light of one of the three primary colors of an addition mixture color,

a second filter stripe having a light transmission characteristic such as to transmit the light of a mixed color of the primary color transmitted through said first filter stripe and one of the other two primary colors, and

a transparent third filter stripe transmitting white light,

said at least three filter stripes being arranged parallelly and consecutively in a specific sequence;

a camera tube provided with said color-resolving striped filter disposed on the front surface thereof and operating to send out as an output signal a superimposed signal comprising, in superimposition,

a direct wave signal containing signals of the three primary colors of said addition mixture color and

a high-band component signal comprising a group of modulated color signals representable as signals resulting from the amplitude modulation respectively of a carrier wave of a frequency equal to a space frequency determined by the number of said groups of filter stripes and carrier wave components of frequencies having higher harmonic relationships to the frequency of said carrier wave by the signals of two primary colors other than the primary color of the light transmitted through said first filter stripe;

first separation means for separating said direct wave signal from the output signal of said camera tube;

second separation means for separating said high-band component signal from the output signal of the camera tube;

first clamping means for clamping at a specific voltage level one of two limiting level parts, namely, the minimum level part and the maximum level part, of the high-band component signal obtained as output of said second separation means and obtaining a first two-color mixture signal;

second clamping means for clamping at a specific voltage level the other of said two limiting level parts and obtaining a second two-color mixture signal; and

matrixing means supplied respectively with the direct wave signal produced as output of said first separation means, said first two-color mixture signal of the output of said first clamping means, and said second two-color mixture signal of the output of said second clamping means and operating to matrix said signals thus supplied and to produce three primary color signals.

3,846,580

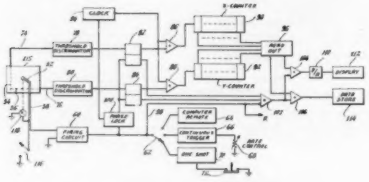
POSITION DETERMINATION DEVICE

Alfred E. Brenner, Glenellyn, Ill., assignor to Summagraphics Corporation, Fairfield, Conn.

Filed Dec. 6, 1972, Ser. No. 312,547

Int. Cl. G08c *21/00*

U.S. Cl. 178—19 **16 Claims**



1. A digitizing position determination device comprising, magnetostrictive transmission means arrayed about a data surface area defined by a plurality of planar coordinates,

pick-up means coupled to said magnetostrictive transmission means and responsive to transmissions from each of said planar coordinates of said magnetostrictive transmission means,

field generating means coupled to said magnetostrictive transmission means for generating a magnetostrictive transmission in each of said planar coordinates of said magnetostrictive transmission means,

said pick-up means and said field generating means being relatively displaceable from each other across said planar coordinates of said magnetostrictive transmission means,

a signal source for providing an energizing signal,

first means responsive to said energizing signal for energizing said field generating means and generating thereby a magnetic field of a magnitude sufficient to magnetostrictively induce a vibrational mode into said magnetostrictive transmission means proximate said field generating means, said vibration propagating along said magnetostrictive transmission means at a predetermined velocity,

said pick-up means responsive to said vibrational mode in said magnetostrictive means for providing a data signal,

second means responsive to said signal source for initiating digitization in digitizing means corresponding to a coordinate position, and

third means responsive to said data signal from a coordinate pos'tion for stopping said digitization for said coordinate position, the accumulated digitization in said digitizing means therein representing the time of transit of said vibrational mode from said field generating device to said pick-up means, thereby providing a digitized coordinate position of the position of said pick-up means relative to said field generating device.

3,846,581

PRINTING APPARATUS USED FOR ELECTRONIC COMPUTERS

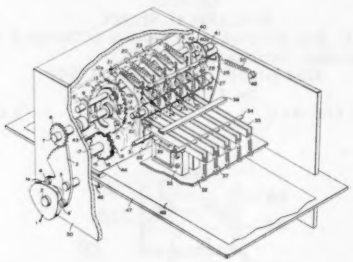
Yasuo Okawara; Toshikazu Shimazaki, and Nagao Mizutani, all of Tokyo, Japan, assignors to Citizen Tokei Company Limited, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,215

Claims priority, application Japan, Dec. 18, 1971, 46-102996; Jan. 19, 1972, 47-7778; Feb. 14, 1972, 47-14819

Int. Cl. H04l *15/24*

U.S. Cl. 178—33 R **2 Claims**



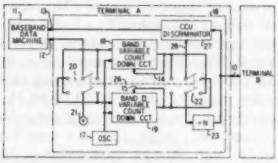
1. A printer comprising a plurality of typewheels mounted for rotation in side by side relation to one another; a plurality of movable type selecting members rotatably disposed on a shaft and in side by side relation to one another adjacent said typewheels respectively, each type selecting member having a ratchet portion formed as a part thereof, a toothed portion in driving engagement with one of said typewheels formed as another part thereof, and a slot; an operation bar member connected to said shaft for reciprocal motion, said operation bar member extending through said slots for driving said type selecting members; a plurality of engaging members pivotally mounted on said type selecting members respectively adjacent said slots, each engaging member having a recess positioned to frictionally engage said operation bar member when said operation bar member is disposed adjacent a particular portion of said slot, each engaging member also having a slide surface continuing from said recess and positioned to frictionally engage said operation bar member when said operation bar member is adjacent a different portion of said slot, each type selecting member having a spring member for urging said operation bar member into frictional engagement with said recess and continuing slide surface; a plurality of selector members adapted to stop rotation of said type selecting members respectively by engagement with associated ones of said ratchet portions; means for retracting said selector members away from said ratchet portions; and means for actuating said selector members to move said selector members from their retracted positions into engagement with said associated ratchet portions of said type selecting members when desired printing types on said typewheels are properly located in registration with the printing positions.

3,846,582

DATA TRANSMISSION TERMINAL FOR FSK FREQUENCY DUPLEXED SYSTEMS

Joseph Henry Condon, Summit, and William Kaminski, West Portal, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Aug. 6, 1973, Ser. No. 385,900
Int. Cl. H04l *5/14*
U.S. Cl. 178—58 R **17 Claims**



1. In a frequency duplex telecommunication system terminal for a frequency shift-keyed system utilizing high frequency band mark and space frequencies for transmission in one direction and low frequency band mark and space frequencies for transmission in the opposite direction, an oscillator, a circuit for counting down the oscillator output to produce mark and space frequencies in one of the mentioned bands, a control circuit for applying the oscillator output to control a terminal receiver including a frequency discriminator, the terminal being CHARACTERIZED IN THAT

the countdown circuit and control circuit each include counting devices for providing selectable frequency signals, each of which signals is at a frequency N times a different one of the mentioned mark or space frequencies,

the control circuit includes a circuit for controlling the frequency discriminator in response to one of the selectable frequencies in the other of the bands for determining the band of discriminator operation,

the countdown circuit further includes an N-counter for dividing the selected frequencies provided by the counting device thereof to produce said mark and space frequencies in the one mentioned band as terminal output signals, and

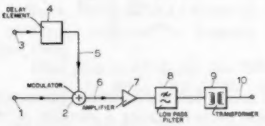
switching arrangements interchangeably provide the selectable frequency signals of the counting devices to the N-counter input and to a control input of the discriminator, respectively.

3,846,583

DIGITAL COMMUNICATION SYSTEMS

Richard Arnold Boulter, Saint Albans, England, assignor to The Post Office, London, England

Filed Oct. 18, 1972, Ser. No. 298,518
Int. Cl. H04l *25/02*
U.S. Cl. 178—67 **4 Claims**



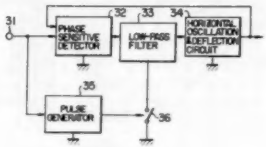
1. A method of converting an isochronous base band data signal into a diphase signal including the steps of applying an unfiltered isochronous base band data signal and a carrier signal having a substantially square-waveform, and a frequency equal to the reciprocal of the duration of one element of the base band data signal to respective inputs of balanced modulating means and shifting the phase relation between the base band data signal and the carrier so that at the modulating means inputs, zero-crossings of the carrier occur one-quarter of a cycle before transitions of the base band data signal.

3,846,584

HORIZONTAL AUTOMATIC FREQUENCY CONTROL CIRCUIT

Takashi Itoh; Akio Nakashima, and Yoshihiro Arakawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 403,834
Claims priority, application Japan, Oct. 9, 1972, 47-100692
Int. Cl. H04n *5/04*
U.S. Cl. 178—69.5 TV **4 Claims**



1. A horizontal automatic frequency control circuit comprising a synchronizing signal separating circuit for separating a synchronizing signal from a reproduced composite picture signal, a horizontal oscillation circuit, a horizontal deflection circuit for supplying deflection current to a horizontal deflection coil unit utilizing the signal applied from said horizontal oscillation circuit, a phase sensitive detector for comparing horizontal synchronizing pulses applied from said synchronizing signal separating circuit with phase comparing pulses derived from said horizontal deflection circuit thereby generating at the output thereof a control signal representative of the difference between the phase of the horizontal synchronizing pulses and the phase of the phase comparing pulses, means for applying said control signal to said horizontal oscillation circuit for controlling the phase of said horizontal oscillation circuit, a low-pass filter connected between said phase sensitive detector and said horizontal oscillation circuit, switching means connected to said low-pass filter for disconnectably connecting said low-pass filter to the transmission path between said phase sensitive detector and said horizontal oscillation circuit, and means for controlling said switching means by vertical synchronizing pulses so as to disconnect said low-pass filter from said transmission path for a predetermined limited period of time following the appearance of the vertical synchronizing signal, so that the AC loop gain of said horizontal automatic frequency control circuit can be increased by the disconnection of said low-pass filter from said transmission path and the phase of said horizontal oscillation circuit can quickly respond to phase shift of the horizontal synchronizing signal.

3,846,585

RECORDING STETHOSCOPE

Earl Slosberg, Cornwell Heights, Pa., and Samuel D. Williams, Jr., Stratford, N.J., assignors to Plastics Development Corporation of America, Philadelphia, Pa.

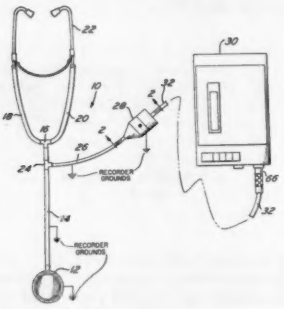
Filed Sept. 21, 1972, Ser. No. 291,101
Int. Cl. H04r *1/46;* **A61b** *7/04*
U.S. Cl. 179—1 ST **5 Claims**

1. A recording stethoscope, comprising:

stethoscope means including an electrically conductive chest piece;

a transducer assembly for converting variations in air pressure within said stethoscope means into analog electrical signals for recording, said transducer assembly comprising a two section housing and means for adjustably con-

necting said two sections together, at least a part of said housing being electrically conductive, a disc shaped transducer responsive to variations in air pressure to generate the analog electrical signals, said transducer being mounted within said housing and being clamped at its periphery between said two sections, a resilient annular member positioned on each side of said transducer between said transducer and each of said two housing sections, an opening in said housing in open communication with the interior of said stethoscope means, and air pressure intensifying means in the form of a conical chamber between said opening and said transducer for amplifying variations in air pressure, said opening being



at the smaller end of said conical chamber and said disc shaped transducer being at the larger end;

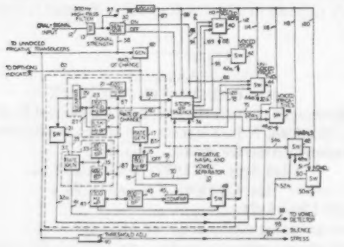
an electrically conductive hollow conduit connecting said chest piece and said opening of said transducer assembly; and an electrical connection means adapted for connection of the output of said transducer to a recording means, said electrical connection means including a conductor for connecting the conductive portion of said transducer assembly housing to the ground or reference potential connection of said recording means whereby the ground or reference potential of the recording means is the same as the potential of the transducer assembly housing and the chest piece adapted to be in contact with a subject being examined.

3,846,586

SINGLE ORAL INPUT REAL TIME ANALYZER WITH WRITTEN PRINT-OUT

David Thurston Griggs, 5128 So. Rolling Rd., Baltimore, Md. 21227

Filed Mar. 29, 1973, Ser. No. 346,173
Int. Cl. G10l 1/16
U.S. Cl. 179—1 SA **5 Claims**



1. Sound separator device for speech-to-writer apparatus, using single-channel input through an amplifier circuit for connected speech, and separating in real time the speech elements into each of the types of speech sounds of, for example, English: (1) vowels and semi-vowels, (2) nasals, (3) unvoiced fricatives, (4) voiced fricatives, (5) unvoiced stops, (6) voiced stops; said separator device comprising (FIG. **1**):

stops-or-silence detector means for distinguishing voiced and unvoiced stops from each other and from the interstitial silences of running speech (**74**);

detection means for nasal, fricative and vowel sounds as they occur in random speech sequence (**10**);

network means of six mutually exclusive logic gates responsive to said foregoing means for deriving the said types of speech sounds (**40,42,44,46,48,50**);

said stops-or-silence detector means (**74**) receiving inputs of the oral signal (**12**) from: (1) a linear amplifier (**88**); (2) oral ON and oral OFF signals from an oral sensor gate (**32**); (3) oral differentiator outputs from a differentiator means (**82**); and (4) signals representing voicing as detected in the range of about 300 to 800 Hz (**80**); and means providing outputs (1) to logic gates for unvoiced (**40**) or voiced (**42**) stops, (2) to a gate for unvoiced fricatives (**44**), and (3) to a silence signal (**98**);

said detection means (**10**) consisting of four networks including filters, timers, rate gnerators, comparators and switches that differentiate instantaneously voiced fricatives, unvoiced fricatives, vowels and semi-vowels, and nasals from each other, at least two network-activated switching means (**31,49**) activated in response to outputs of said networks for enabling individual identification and processing for phoneme outputs, at least one of said filters (**15**) producing an output representing detected voicing in the range of about 300 to 800 Hz.;

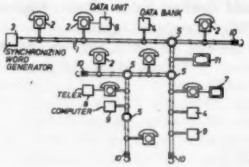
said network means of logic gates (**40,42,44,46,48,50**) operated by said stops-or-silence detector means (**74**) or by the nasal, fricative and vowel detection means (**10**) in random real-time sequence according to the sounds of the vocal input.

3,846,587

DATA TRANSMISSION SYSTEM FOR A MULTIPLE BRANCH NETWORK

Klaus Dieter Schenkel, Senden; Wolfgang Herzig, Seligweiler; Rudolf Schehrer, Geisling En/Steige, and Rupert Hildenbrand, Ulm-Soflingen, all of Germany, assignors to LICENTIA Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 22, 1973, Ser. No. 334,757
Claims priority, application Germany, Feb. 22, 1972, 2208159
Int. Cl. H04j 3/08
U.S. Cl. 179—15 AL **12 Claims**



1. In a multiple access data transmission system connected in a communication network having a plurality of branches each composed of a first and second transmission line, a plurality of individual user stations connected to the branches and a plurality of nodes interconnecting the plurality of branches so as to form an interconnected system of all of the user stations, the improvement wherein said system comprises: generating means connected in the system for periodically transmitting synchronizing words; transfer means connected at the ends of each of the branches at the end of the

network for transferring the synchronizing words between said first and second transmission lines; time division means connected within each of the user stations for dividing the interval between successive synchronizing words into n equal time slots; search means connected within each of the user stations for searching for a free time slot; and transmitting means connected within each of the user stations for transmitting a data block signal over one of said transmission lines within at least one free time slot.

3,846,588

TELECOMMUNICATION SYSTEMS

Herbert Holzwarth, Stockdorf, Germany, assignor to Siemens & Halske Aktiengesellschaft, Munich, Germany

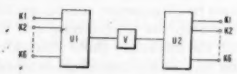
Continuation of Ser. No. 856,881, Aug. 29, 1969, abandoned, which is a continuation of Ser. No. 447,423, Aug. 5, 1965, abandoned.

This application Nov. 16, 1970, Ser. No. 93,557

Claims priority, application Germany, Aug. 7, 1964, 92520

Int. Cl. H04j *1/00*

U.S. Cl. 179—15 FE **7 Claims**



1. A multiple message transmission system including in a single telephone exchange installation means for transmitting a multiplicity of telephone messages over distances of less than 10 km each over separate small diameter cable lines in their original time and frequency relationships, and for compensating for attenuation suffered by the messages in the cable lines, said single exchange installation including:

a common amplifier stage having two sets of terminals and operable to supply at one set of terminals amplified multiplexed messages supplied to its other set of terminals,

first multiplex converter means having its input connected to a plurality of said small diameter lines and its output connected to said other set of terminals of said amplifier stage,

second multiplex converter means having its input connected to said one set of terminals of said amplifier and its output connected to further extensions of said small diameter lines, said first and second converter means being operable respectively to multiplex together messages supplied thereto by said plurality of lines for common amplification in said amplifier stage, and to demultiplex the plurality of messages, after amplification, to restore them to their original time and frequency relationships for further transmission over said further extensions of said lines, said lines being of the smallest possible diameter down to a lower limit of 0.2 mm.

3,846,589

TELEPHONE TRUNK SIGNALING LINK CIRCUIT

Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Kentrox Industries, Inc., Portland, Oreg.

Filed June 2, 1972, Ser. No. 259,222

Int. Cl. H04q *1/08;* **H05k** *1/04*

U.S. Cl. 179—98 **1 Claim**

1. An electrical connector and component mount assembly providing a telephone E and M trunk signaling link circuit, comprising:

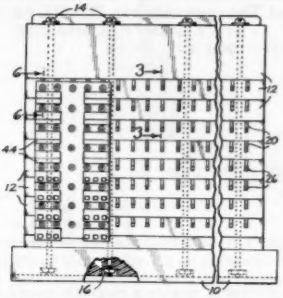
a. a plurality of electrically non-conductive terminal support blocks arranged in a stack and secured together releasably to form a block assembly,

b. a plurality of electrically conductive terminals mounted between adjacent blocks in laterally and electrically spaced-apart relationship and projecting from opposite sides of the block assembly,

c. one projecting end of each terminal providing a connector for an electrical conductor,

d. the opposite projecting end of each terminal providing an electrical contact,

e. a printed circuit board having a plurality of openings therethrough arranged for reception of the electrical contacts for supporting the printed circuit board on the contacts,



f. a plurality of electrical components supported on the printed circuit board and including a plurality of amplifiers supported removably on the printed circuit board, and

g. electrical conductors on the printed circuit board interconnecting predetermined ones of the contact-receiving openings and said electrical components in a telephone E and M trunk signaling link circuit configuration.

3,846,590

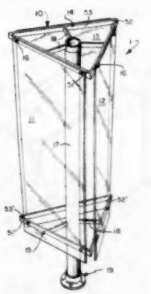
TELEPHONIC EQUIPMENT DISTRIBUTION PANEL ASSEMBLY

Travis R. McLain, Channelview, Tex., assignor to The Siemon Company, Watertown, Conn.

Filed Jan. 16, 1973, Ser. No. 324,126

Int. Cl. H04q *1/14*

U.S. Cl. 179—98 **4 Claims**



1. A telephonic equipment distribution panel assembly for use inside a building, the combination comprising:

a base member supported on the floor of the building;

an upright, central post supported on said base member;

a plurality of triangular shaped support members coupled to said post by means of radial arms, said support members being spaced along said post;

each of the sides of one of said support members lying in the same substantially vertical plane as one of the sides of another of said support members;

three flat mounting members, each coupled to a respective pair of coplanar sides of said support members; and

a plurality of terminal connecting blocks secured to each of said mounting members in spaced, side-by-side rows.

3,846,591

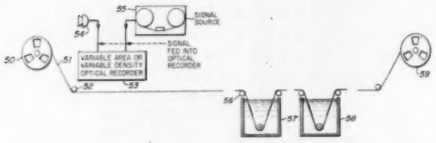
PHOTOGRAPHICALLY MAGNETIC INFORMATION STORAGE ELEMENT

Laura K. Case, 14 Lockeland Rd., Winchester, Mass. 01890

Continuation-in-part of Ser. No. 862,824, Oct. 1, 1969, abandoned. This application Aug. 21, 1972, Ser. No. 282,206

Int. Cl. G11b *11/14, 5/84, 5/62*

U.S. Cl. 179—100.1 A **13 Claims**



1. The process of making a magnetic record photographically consisting essentially of exposing a photosensitive copy medium comprising a photoconductor and a binder imagewise to a pattern of activating radiation corresponding to a magnetically readable image to produce a physically developable image of catalytic nuclei and contacting this copy medium with a physical developer comprising chemically reactive, magnetizable image forming material comprising a solution of metal ions which reacts selectively to amplify the physically developable image to a visible magnetically readable image.

3,846,592

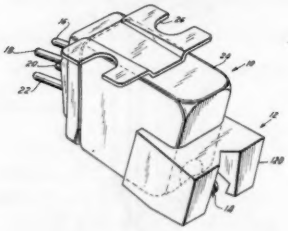
PHONOGRAPH PICKUP CARTRIDGE FOR FOUR CHANNEL RECORDINGS

Walter O. Stanton, Laurel Hill Rd., Laurel Hollow, N.Y. 11948

Filed Mar. 29, 1973, Ser. No. 346,008

Int. Cl. H04r *11/12*

U.S. Cl. 179—100.41 K **8 Claims**



1. A magnetic phonograph pickup suitable for use in reproducing four channel recordings comprising:

a pair of separated magnetic circuits, each terminating in a pair of pole pieces with the pole pieces arranged in a quadrangular cluster;

a moving system with a stylus and a supporting magnetic armature mounted for pivotal movement between the cluster of pole pieces; and,

a nonmagnetic, electrically conductive, eddy current shield interposed between and in electrical contact with portions of said magnetic circuits intermediate said pole pieces.

3,846,593

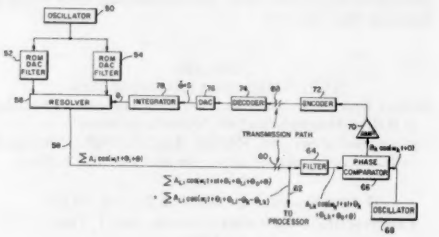
TELEPHONE LINE TEST SYSTEM

Frank R. Bradley, 9 Dash Pl., Bronx, N.Y. 10463

Filed Oct. 31, 1973, Ser. No. 411,274

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 R **7 Claims**



1. A system for transmitting a predetermined complex signal having at least two frequency components therein along a transmission line from the transmitting end to the receiving end thereof, with the frequency shifts which are introduced by the transmission line being cancelled, comprising means for continuously shifting the phase of each frequency component in said complex signal prior to its transmission, means for comparing the phase of one of the received frequency components with the phase of a reference signal of the same frequency to derive a measure of the phase difference, means for transmitting a control signal indicative of the phase difference from the receiving end of the line to the transmitting end of the line, and means for controlling said phase shifting means in accordance with said control signal such that the phase shifts introduced at the transmitting end of the line are cancelled out by the line as said complex signal travels from the transmitting end to the receiving end thereof.

3,846,594

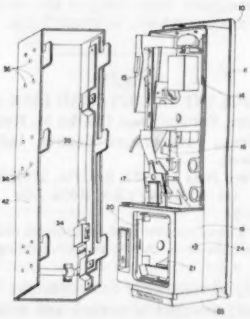
COIN TELEPHONE WITH SEPARATE COSMETICALLY ATTRACTIVE COVER

Ronald Joseph Morrell; Joseph Thompson; Raymond Charles Hemming, and Henry Allan Main, all of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 26, 1972, Ser. No. 301,093

Int. Cl. H04m *1/02*

U.S. Cl. 179—179 **3 Claims**



1. A prepay coin telephone unit comprising:

a housing of heavy gauge steel;

an extension at the lower end of said housing, said extension extending forward of said housing and forming a box-like enclosure, the remainder of said housing having a forward facing peripheral edge;

an inner cover of heavy gauge steel, including a rear peripheral edge extending along the sides and top of the inner cover and in close fitting engagement with said forward facing peripheral edge of said housing, the lower edge of the inner cover in close fitting engagement with said extension;

a latch mechanism retaining said inner cover on said housing, said latch mechanism comprising; a vertically slidable latch member on each side of said inner cover, transverse connecting means connecting said latch members for simultaneous movement of said members, and formations on said latch members engaging with formations on said housing; and actuating mechanism on one side of said inner cover to actuate said latch members, and to lock said latch members in a latching position;

an outer cover of unitary construction attached to and in close fitting engagement with said housing and said inner cover, said outer cover of lightweight construction and presenting a cosmetically attractive outer surface;

latch means for releasably securing the outer cover of said housing;

a telephone dial mounted on said inner cover and extending through an aperture in said outer cover;

a telephone hook mounted on said inner cover and extending through an aperture in said outer cover;

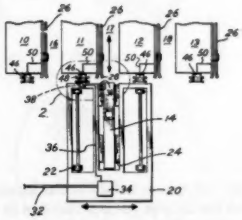
a coin inlet and a coin return button mounted on said inner cover and extending through said outer cover.

3,846,595

VEHICLE POWER SYSTEM

Raymond H. Richardson, Chicago, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed June 14, 1973, Ser. No. 370,173
Int. Cl. B60l *1/00*
U.S. Cl. 191—3 **5 Claims**



1. In a storage and retrieval system, a method of providing power to a load carrier only when a transfer vehicle is approximately aligned with a given aisle in a storage rack installation, comprising the steps of:

continuously transmitting power to said transfer vehicle,

moving the transfer vehicle across the ends of said aisles, moving a first power transmission coupling simultaneously with said transfer vehicle to engage said coupling with a second power transmission coupling adjacent said given aisle to energize said second power transmission coupling with said power when said transfer vehicle is at least approximately aligned with said given aisle, and

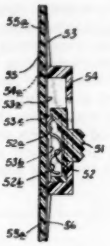
moving said load carrier between said given aisle and said transfer vehicle in response to such engagement of said couplings.

3,846,596

SLIDE SWITCH FOR ELECTRICAL STRIP CABLE

Leo Wolf, 5701 Sheridan Rd., Chicago, Ill. 60660

Division of Ser. No. 212,457, Dec. 27, 1971, Pat. No. 3,763,307. This application July 2, 1973, Ser. No. 375,527
Int. Cl. H01h *15/00;* **H05k** *1/04*
U.S. Cl. 200—16 D **1 Claim**



1. An electrical switch adapted for use in an electrical strip cable assembly of the type having an elongated thin flat strip of flexible insulating material and a pair of parallel spaced metal foil conductors bonded to a surface of said strip and extending longitudinally therewith, said switch comprising:

a switch base having gradually sloping end portions;

a pair of parallel spaced metal foil conductors mounted on said base and extending across said sloping end portions, said switch conductors adapted to mate with said cable conductors, and with at least one of said switch conductors having a discontinuous portion therein;

a resilient contact member having two foil-contacting portions and operable to selectively bridge said discontinuous portion of said switch conductor to thereby complete the circuit of said discontinuous switch conductor;

actuating means for selectively sliding said resilient conductive contact member between a bridging position and a non-bridging position;

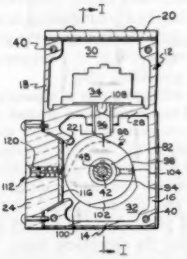
and means for securing said contact member and actuating means in an operative relationship with said base.

3,846,597

ROTARY PROGRAMMER WITH DECLUTCHABLE CAMS AND TOOL OPERATED ADJUSTABLE MOUNTING MEANS

Clarence B. Ziegler, Jr., 3510 Balmars Ct., Jackson, Mich. 49201

Filed July 20, 1973, Ser. No. 381,279
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 BA **12 Claims**



1. A rotary programmer apparatus comprising, in combination, a housing, a driven shaft rotatably mounted on said housing, a cam shaft coaxially mounted upon said driven shaft

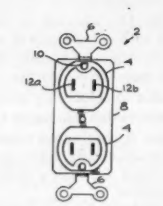
relatively rotatable thereto and having a cam mounting portion located within said housing, at least one cam mounted upon said cam shaft cam mounting portion, adjustable mounting means adjustably mounting said cam upon said cam shaft, control means mounted on said housing engaging said cam and controlled thereby, a key member mounted upon said driven shaft for rotation therewith, a clutch member mounted upon said cam shaft for rotation therewith and located adjacent said key member, means mounting one of said members for relative axial displacement upon its associated shaft, axially extending torque transmitting means defined on said members, said torque transmitting means intermeshing at a first axial position of said one of said members relative to the other of said members to lock said driven and cam shafts for simultaneous rotation and disengaging at a second axial position of said one of said members permitting rotation of said cam shaft upon said driven shaft and rotation of said cam relative to said driven shaft and housing.

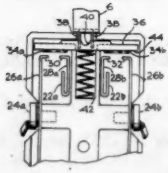
3,846,598

SAFETY, ELECTRICAL GROUNDING OUTLET WITH SAFETY SWITCH

Michael Mucsi, 2474 S. Centinela Ave., Los Angeles, Calif. 90064

Filed Nov. 2, 1973, Ser. No. 412,485
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.09 **8 Claims**





1. An electrical grounding outlet, comprising:

a plug receptacle having a ground prong hole and a plurality of circuit prong holes for receiving the ground prong and circuit prongs, respectively, of a corresponding and mating multiprong grounding plug;

grounding means and a plurality of separate circuit contacts secured to said receptacle, said ground prong hole being in communication with said grounding means and each of said circuit prong holes being in communication with one member of said plurality of separate circuit contacts, with the grounding means and the circuit contacts engaging a ground prong and circuit prongs, respectively, of the aforementioned plug when the prongs thereof are matingly inserted into the receptacle holes;

a plurality of separate circuit terminals secured to said receptacle, each of said circuit terminals being associated with one member of said plurality of separate circuit contacts to form a plurality of non-bridging partial circuits;

separate switch means associated with each of said non-bridging partial circuits, said separate switch means being mutually actuable to close or open said non-bridging partial circuits and thereby establish or interrupt electrical communication between the circuit terminal and the circuit contact thereof;

a non-conductive actuator disposed within said receptacle for actuating said separate switch means, said actuator being reciprocally displaceable between an opened circuit position and a closed circuit position, said separate switch means being actuated to close said non-bridging partial circuits when said actuator is displaced from the opened circuit position to the closed circuit position, and said separate switch means being actuated to open said non-bridging partial circuits when said actuator is displaced from the closed circuit position to the opened circuit position;

said actuator being adjacent said ground prong hole when said actuator is in the opened circuit position whereby the insertion of the plug ground prong into the ground prong hole displaces said actuator from the opened circuit position to the closed circuit position; and

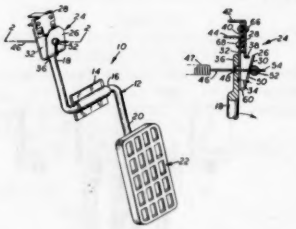
means responsive to the removal of the ground prong from the ground prong hole for displacing the actuator from the closed circuit position to the opened circuit position.

3,846,599

VEHICLE PEDAL OPERATED SWITCH

John Garfield Fontaine, Fort Lauderdale, Fla., assignor to Fail Safe Brake Corporation, Fort Lauderdale, Fla.

Filed Oct. 29, 1973, Ser. No. 410,475
Int. Cl. H01h *3/14, 17/10*
U.S. Cl. 200—61.89 **11 Claims**



1. A switch for use in a foot pedal assembly on a motor vehicle which has an arm pivoted between its upper and lower ends, foot pedal on the lower end of said arm, said arm having an opening near its upper end, and a cable extending through said opening in the arm and having an enlargement on its front end in front of said opening in the arm, said switch comprising:

first and second contact members having confronting engageable contact portions;

and means attaching said contact members to one another for handling as a unit and insulating said contact members from each other;

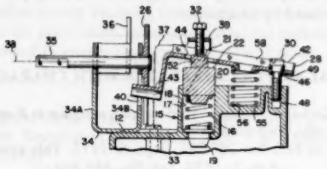
said first contact member having open-ended slot means therein for passing said cable when said first contact member is inserted between the front of said arm and said enlargement on the cable;

said first contact member being engageable from in front by said enlargement to cause relative movement between said confronting contact portions of the contact members to operate the switch when the foot pedal is depressed.

3,846,600
MEANS FOR CALIBRATING PRESSURE SWITCHES AT EXTRA-LOW PRESSURE SETTINGS

Lawrence A. Kolze, Bensenville, and William H. Jones, Villa Park, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 23, 1973, Ser. No. 408,787
Int. Cl. H01h 35/34, 1/34
U.S. Cl. 200—83 S 13 Claims



1. A calibration mechanism for a pressure switch of the type having a spring-biased plunger arrangement adjustable to sense different pressures to which said switch responds, said mechanism comprising:

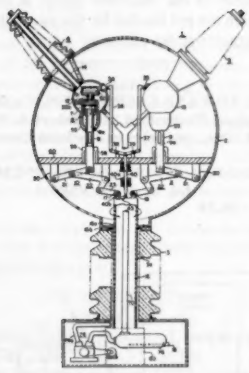
means for establishing and calibrating normal "low to high" pressure settings of said switch, said "low to high" pressure setting means including lever means for adjusting said plunger and cam means operatively associated with said lever means to provide a "low to high" range of settings; and

means for establishing and calibrating an "extra-low" pressure setting for said switch, said "extra-low" pressure setting means effective to isolate said lever and said cam means from acting on said plunger when said "extra-low" pressure setting means is operative.

3,846,601
COMPRESSED-GAS CIRCUIT INTERRUPTER

Winthrop M. Leeds, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1972, Ser. No. 240,144
Int. Cl. H01h 33/82
U.S. Cl. 200—148 B 21 Claims

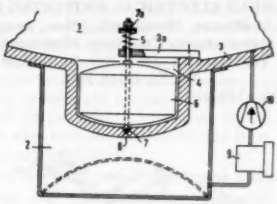


1. A compressed-gas circuit interrupter including a metallic tank and a terminal bushing extending therein, an arc-extinguishing unit including separable contact structure, at least, partically supported by the interior end of said terminal bushing, a high-pressure gas-reservoir chamber also supported adjacent the inner end of the terminal bushing and supported thereby for close proximity to said separable contact structure, and the gas exhausting during arc interruption into the general region within said metallic tank.

3,846,602
DUAL-PRESSURE HIGH-VOLTAGE COMPRESSED-GAS INSULATED ELECTRIC CIRCUIT BREAKER

Fritz Hoffmann, Reinheim, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Jan. 4, 1973, Ser. No. 321,027
Int. Cl. H01h 33/82
U.S. Cl. 200—148 E 5 Claims

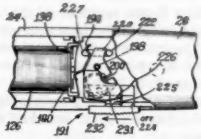


1. Electric high-voltage equipment including a chamber containing electrically insulating compressed gas which condenses to a liquid under increased pressure and/or lowered temperature, a condensate collecting container positioned and connected with the chamber to receive the condensed liquid therefrom and which is maintained at a reduced pressure returning the condensate to gas, and a compressor connected to this container to remove the gas therefrom and force it into the chamber to maintain in the latter the electrical insulation provided by the compressed gas; wherein the improvement comprises means for forming a fluid connection between the container and the chamber and which is responsive to the production of condensate in the latter to open the interconnection and which otherwise closes the interconnection.

3,846,603
HAIR CLIPPER WITH IMPROVED ON/OFF SWITCH

John M. Houser, Milwaukee, Wis., assignor to Oster Corporation, Milwaukee, Wis.

Filed Nov. 13, 1972, Ser. No. 305,952
Int. Cl. H01h 13/08
U.S. Cl. 200—157 8 Claims



1. An electric appliance comprising a housing enclosing a motor which is drivingly connected to an implement mounted exteriorly of said housing, a power cord connected to said housing, a switch for electrically connecting said motor to said power cord including a manually operable member slidably in the wall of said housing and having a knob outside of said housing and an operating portion within said housing, spaced fixed contacts supported by insulating means on said motor, movable contact bridging means supported on a carrier pivotally mounted on the inside wall of said housing, over center spring means pivotally connected to said carrier and to said

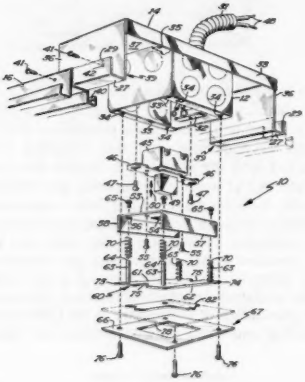
operating portion to urge said movable contact bridging means into or out of engagement with said fixed contacts when said manually operable member is moved to the limit of its sliding movement in either direction, said housing including stop means to limit pivotal movement of said carrier when said over center spring means is urging said contact bridging means out of engagement with said fixed contacts, said over center spring mechanism comprises a plastic ring having integral parallel projections extending in opposite directions from diametrically opposed portions of said ring, said projections being received in openings in said carrier and said operating portion.

3,846,604

OVERHEAD ELECTRICAL SWITCHING DEVICE

George H. Shallbetter, Minneapolis, Minn., assignor to States Electric Manufacturing Co., North Minneapolis, Minn.

Filed June 11, 1973, Ser. No. 368,962
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 D **5 Claims**



1. An overhead electrical switching device usable on a suspended ceiling having ceiling panels carried by frame members, the device positionable above an aperture in the ceiling, comprising:

a mounting strap including a rigid, generally flat web positionable above the ceiling panels, said web having a pair of box channels, a box channel extending from said web at opposite sides of said web, each said box channel being attachable to a frame member of the ceiling to thereby rigidly fix said strap to the frame members of the ceiling; an electrical junction box fixed to said web of said mounting strap with its open side facing downwardly and confronting the aperture in the ceiling;

a switch mounting plate having a plurality of guide sockets therein, said mounting plate attached to and within said junction box;

electrical switch means including a button, said switch means operable between on and off conditions by displacing said button a predetermined distance, said switch means being rigidly mounted to said switch mounting plate;

an actuating plate having an inner face positioned to confront said button of said electrical switch means and an outer substantially flat face;

a plurality of guide rods, each rod having an end fixed to said actuating plate and a free end, said free ends extending within said plurality of guide sockets of said mounting plate for sliding movement therethrough as said actuating plate moves relative to said mounting plate from a rest position wherein said button is not displaced said predetermined distance by said actuating plate, to a depressed position wherein said button is displaced said predetermined distance by said actuating plate to operate said switch means between on and off conditions;

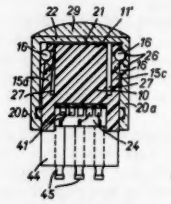
a plurality of stops positioned at the free ends of a plurality of said guide rods to contain said free ends of said guide rods within said guide sockets in said mounting plate; and spring means connected between said actuating plate and said mounting plate urging said actuating plate to said rest position and yieldably retaining said actuating plate in said rest position permitting said actuating plate to be depressed by an operator.

3,846,605

VISUAL DISPLAY APPARATUS WITH CHARACTER MATRIX

Pirchl, Gerhard, Dietikon, Switzerland, assignor to Romay AG, Oberkulm, Switzerland

Division of Ser. No. 287,267, Sept. 8, 1972. This application Apr. 1, 1974, Ser. No. 456,544
Claims priority, application Switzerland, Sept. 15, 1971, 13490/71
Int. Cl. G08b *5/36*
U.S. Cl. 200—316 **24 Claims**



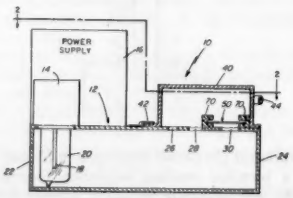
1. An apparatus for the visual display of characters, especially decimal numerical characters which are associated with successive settings of an adjustment component and a base body and from which characters there is visually displayed during each setting the character associated therewith, comprising a base body and an adjustment component, said base body being provided with a visual surface with a character matrix for the characters to be displayed, said character matrix consisting of lines, cover element means including resilient tongues adjustable by means of the adjustment component for the lines of the character matrix in order to cover those lines which are not needed for the momentary display of a relevant character at the character matrix.

3,846,606

MICROWAVE ENERGY APPLICATOR

Richard H. Edgar, Chelmsford, and Robert A. Peterson, Canton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 27, 1972, Ser. No. 292,567
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **3 Claims**



1. A microwave energy heating apparatus comprising:
a source of electromagnetic microwave energy;

means for propagating said energy including a waveguide having a longitudinal axis closed at both ends to establish standing waves with the axis of propagation extending along said longitudinal axis;

said waveguide having an array of spaced slots in one wall with each of said slots having a gradually varying length substantially greater than the width with the major dimension extending transverse to the axis of the propagation of energy to provide high fringing electromagnetic fields along a path in close proximity to said slots;

a conductive enclosure positioned on said slotted wall to confine energy escaping through said slots; and

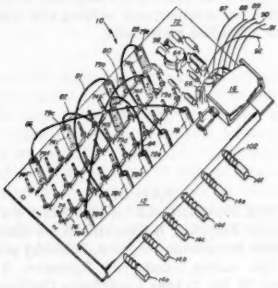
means for positioning an article within said enclosure to be exposed to energy from only one of said slots.

3,846,607

PROGRAMMING CIRCUIT FOR MICROWAVE OVENS

Arnold M. Bucksbaum, 2035 Blake Blvd., S.E., Cedar Rapids, Iowa 52401

Filed Apr. 3, 1972, Ser. No. 333,351
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **6 Claims**



1. In combination;

a voltage source;

an electromagnetic energy generator; and

an electrical circuit to operate said energy generator connected to said voltage source;

said circuit including means for automatically controlling the operation cycles;

said means comprising;

timing circuit means including serially connected resistances each having substantially the same value and a fixed capacitance for programming predetermined total time cycles of operation by electrically interconnecting a predetermined number of said resistances to said capacitance to collectively add to the required total resistance values to achieve the desired operation time;

selector switch means operatively associated with said timing circuit means to select each desired operation cycle; and

solid state means coupled to said timing circuit means for releasing said selector means upon completion of a desired programmed cycle.

3,846,608

HIGH TEMPERATURE RESISTANT DOOR SEAL FOR A MICROWAVE OVEN

Benjamin Vera Valles, San Jose, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

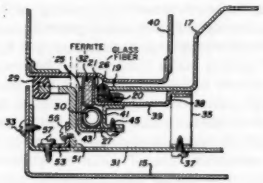
Filed Feb. 11, 1974, Ser. No. 441,044
Int. Cl. H05b *9/06*
U.S. Cl. 219-10.55 **23 Claims**

1. In a microwave oven having a heating chamber within which foodstuffs to be heated by exposure to microwave energy radiation are received, an entry opening at an end of said chamber to provide access to said chamber, an annular border region surrounding said entry opening, and a movable door operable between an open and closed position to prevent exit of microwave energy radiation, said door including a middle door portion to cover said entry opening to said chamber and an annular border region about said middle door portion which covers, at least in part, said annular border region surrounding said heating chamber entry opening to form opposed annular regions, and microwave energy seal means to prevent radiation leakage from physical gaps between said annular door portion and annular border region; the improvement in said combination wherein said microwave energy seal means comprises:

a choke type seal which includes a first elongated continuous electrically conductive walled cavity of predetermined depth located behind one of said annular border regions and extending about said entry opening; and

a narrow opening in said first cavity located in said one of said annular border regions and extending entirely about said entry opening and spaced a predetermined distance from said entry opening for providing microwave energy pervious path between said cavity and from about said opposed annular regions;

a dissipative seal which includes a second elongated cavity underlying one of said annular regions and extending



about said entry opening, a narrow opening in said second cavity located in said one of said annular regions and extending about said entry opening and spaced a predetermined distance therefrom for providing a passage between said annular region and said second cavity,

microwave energy dissipating means located partially within, extending about, and protruding from said narrow opening in said second cavity,

spring means located within and extending about said second cavity for providing a force on said dissipative means in a direction outwardly of said second cavity to force said dissipative means outwardly from said opening in said second cavity and apply a pressure to the opposed one of said annular regions;

a third seal which includes a compressible strip of electrically lossy material located on one of said annular regions and extending about said entry opening for compressive engagement between said annular door region and said annular border region surrounding said chamber; and

wherein said opening in said first cavity is spaced from said opening in said second cavity by a predetermined distance within the range of 0.02 and 0.24 inch and is located more proximate said entry opening than said opening in said second cavity and wherein said opening in said second cavity is located more proximate said entry opening than said third seal.

3,846,609

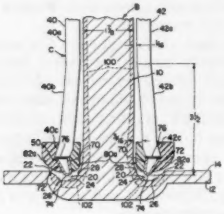
INDUCTOR FOR INDUCTIVELY HEATING ELONGATED ROTATING WORKPIECE

Larry G. Enk, Macedonia, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Nov. 29, 1973, Ser. No. 420,018
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.79 **12 Claims**

1. In an inductor for inductively heating an elongated workpiece as it is rotated about a central axis; said workpiece

including a generally cylindrical shaft portion concentric with said axis, a flange including a surface generally orthogonal to said axis and facing said shaft portion and a circumferentially extending recess between said shaft portion and said flange surface, said recess extending axially inwardly of said surface in a direction opposite to said shaft portion; said inductor including two generally parallel conductors extending along said shaft portion and into said recess and first and second cross over conductors joining said parallel conductors at axially spaced positions along said shaft portion with the first of said cross over conductors extending into said recess, said



conductors being spaced from and inductively coupled to said workpiece, the improvement comprising: said one cross over conductor having a first portion generally facing said shaft portion of said workpiece, a second portion facing away from said shaft portion and a third portion between said first and second portions and generally facing into said recess; and a layer of high permeability material between said first portion and said shaft portion, said layer being carried by said first portion, spaced from said shaft portion and having a thickness allowing saturation thereof when an alternating induction heating current is passed through said inductor.

3,846,610

MAKING OF LONGITUDINALLY WELDED METAL TUBES

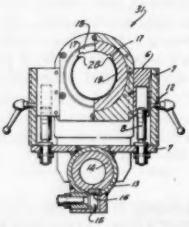
Peter Asselborn; Werner Cramer, both of Bergisch Gladbach, and Heinrich Mullejans, Erkrath-Unterbach, all of Germany, assignors to Felten & Guilleaume Carlswerk Aktiengesellschaft, Cologne, Germany

Filed Feb. 22, 1973, Ser. No. 334,953

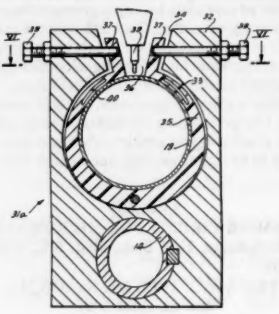
Claims priority, application Germany, May 17, 1972, 2208393; May 17, 1972, 2223984; July 13, 1972, 2234427

Int. Cl. B21c 37/08

U.S. Cl. 219—61 **12 Claims**



1. A method of making metal tubes, comprising the steps of arcuately deforming the opposite longitudinally extending marginal portions of a metallic strip in direction inwardly towards one another; subjecting the exposed edges of said marginal portions to a material-removing operation in preparation for subsequent welding; engaging and arcuately deforming only the remainder of said strip intermediate said



marginal portions to prevent contact with and contamination of said edges, so as to convert the strip into a tube in which said edges face one another; and welding said edges together so as to form a finished metal tube.

3,846,611

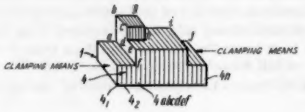
TOOL FOR SHAPING ARTICLES TO A PATTERN

Dmitry Lvovich Fedjukin, B-Cherkizovskaya ulitsa, 10-a, kv. 32; Ljudmila Semenovna Sergeeva, Leninsky prospekt, 97b, 107, kv. 59; Andrei Nikolaevich Bakharev, 3 Cherkizovskaya ulitsa 78, kv. 2; Inna Leonidovna Gorlina, ulitsa Panfilova 4/5, korpus 4, kv. 79; Anatoly Izrailevich Aronov, ulitsa Vavilova 44, korpus 4, kv. 69; Arkady Timofeevich Kravets, ulitsa Vavilova 44, korpus 4, kv. 3; Petr Evmenovich Korochkin, Nizhne-Pervomaiskaya ulitsa 66, kv. 32, and Alexei Ivanovich Titov, Beregovoi prospekt, 7, korpus 2, kv. 69, all of Moscow, U.S.S.R.

Filed Aug. 15, 1973, Ser. No. 388,642

Int. Cl. B23k 9/16

U.S. Cl. 219—69 E **2 Claims**



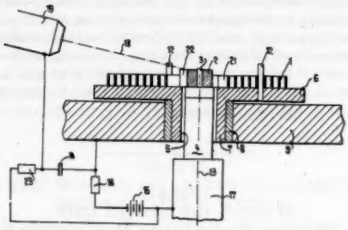
1. A tool for electro-shaping articles to a pattern by way of three-dimensional copying of the tool having the shpae of the pattern, said tool comprising a pack of tightly fitting plates braced in the transverse direction at the ends thereof, at least some of said plates being of different lengths, each of said plates having an end surface dimensioned to conform to the profile of a respective cross-section of said pattern, said plates being arranged in one sequence conditioned by the shape of said pattern and adapted to be reset in the reverse sequence within said pack to produce a mirror image of the shape of said pattern on the tool for shaping articles with a mirror-image shape of said pattern.

3,846,612

PROCESS FOR SECURING A HOROLOGICAL BALANCE SPRING OR HAIR SPRING AND A COLLET TOGETHER BY WELDING

Jean-Jacques Augsburger, Lausanne, Switzerland, assignor to Erfinor A.G., Canton of Berne, Switzerland

Filed Nov. 15, 1973, Ser. No. 416,265
Claims priority, application Switzerland, Dec. 15, 1972, 18276/72
Int. Cl. B23k 27/00
U.S. Cl. 219—121 LM 4 Claims



1. A process for fixing the inner end of a horological balance spring on a collet and then welding the two parts together including the steps of preliminarily positioning said balance spring on a conducting rotatable support, locating said collet on an arbour insulated from said support, applying an electric potential between said arbour and said rotating support and spring, bringing the inner end of said spring into contact with said collet so that an electric spark preliminarily bonds said spring and collet together in the required position, and then applying a laser beam to weld said spring and collet together.

3,846,613

METHOD OF MANUFACTURING WELDING ELECTRODES

Nikolai Petrovich Jurchenko, ul. Katerinicha, 13, kv. 24, Kramatorsk; Evgeny Arkadievich Chubarov, ul. Kurortnaya, 82, Rostov; Ivan Nikolaevich Pisarenko, Budenovsky Prospekt, 96, kv. 68, and Ljudmila Anatolievna Starikova, ul. Dimitrova, 103, both of Kramatorsk, all of U.S.S.R.

Filed Aug. 18, 1972, Ser. No. 281,771
Int. Cl. B23k 35/22
U.S. Cl. 219—145 3 Claims

1. A method for manufacturing welding electrodes comprising the steps of preparing a coating mixture comprising calcium fluoride, rutile and metal oxide components, adding to said mixture dicalcium silicate in an amount from 0.1–5 percent by weight based on the weight of said mixture, mixing said coating with soluble silicate, coating the resulting mixture on a metal core and subsequently applying heat to the coated core.

3,846,614

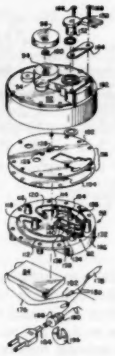
ELECTRIC FLUID HEATING UNIT

Edward J. Doyle, Hatboro, and Richard S. Bagwell, Jr., Lancaster, both of Pa., assignors to Schick Incorporated, Lancaster, Pa.

Division of Ser. No. 76,454, Sept. 20, 1970, Pat. No. 3,758,002. This application May 2, 1973, Ser. No. 356,569
Int. Cl. H05b 1/00; B67d 5/62; F24h 1/12
U.S. Cl. 219—302 2 Claims

1. In a product dispenser of the type including an electrical resistance heating element, and a heat storage element in thermal communication with said heating element and having on an outer surface thereof at least one open channel having an inlet and an outlet for receiving said product, the improvement comprising a cover assembly for said channel comprising, in combination:

a first member of relatively thin synthetic plastic material adapted to withstand the temperature of the product to be dispensed and dimensioned to overlie said channel;



a second member of relatively thick flexible material coextensive with and superimposed over said first member; and

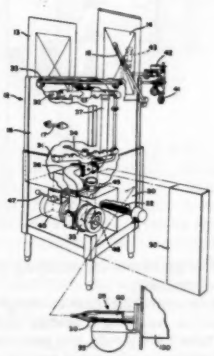
means for urging said second member into closely overlying relationship to said outer surface of said heating element whereby said first member is urged into sealing engagement with the margins of said channel to form a heating chamber for said product.

3,846,615

LIQUID TEMPERATURE CONTROL AND LOW LIQUID LEVEL DETECTOR

Stuart E. Athey, and W. Edwin Thornburg, both of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed Apr. 5, 1973, Ser. No. 348,193
Int. Cl. F24h 1/00
U.S. Cl. 219—333 13 Claims



1. Apparatus for maintaining an elevated temperature of a liquid comprising

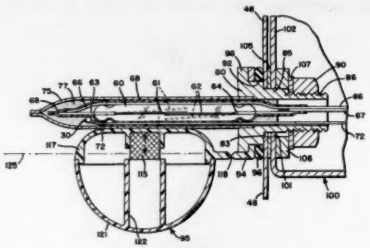
a reservoir adapted to contain the liquid to be heated,

heating means in said reservoir,

means positioned in said reservoir at a level above the level of said heating means including

means for sensing the temperature of said liquid including a thermistor whose electrical characteristics vary in accordance with temperature and

means for sensing that the liquid is above a predetermined level, and



circuit means responsive to said temperature sensing means for controlling the operation of said heating means whereby to maintain the liquid within a predetermined temperature range, said circuit means being responsive to said liquid level sensing means and said temperature sensing means for disabling said heating means if the liquid level falls below said predetermined level or if said thermistor becomes either open or shorted.

3,846,616

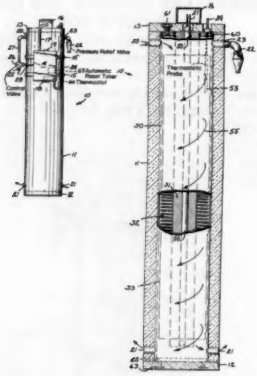
PORTABLE GAS HEATER

Joseph J. Beck, Berlin, Wis., assignor to McQuay-Perfex Inc., Minneapolis, Minn.

Filed Mar. 12, 1973, Ser. No. 340,447

Int. Cl. H05b *1/00;* **F24h** *3/00*

U.S. Cl. 219—365 **1 Claim**



1. A portable gas heater for supplying intermittent bursts of heated gas, comprising:

a. a generally cylindrical heat exchange tube having a central bore for receiving a heating element, said heat exchange tube having sufficient mass for providing a reservoir for storing a substantial amount of heat;

b. an electrical heating element positioned within said bore, said heating element contacting said heat exchange tube in direct heat conduction relationship therewith;

c. a cylindrical inner shell member coaxially positioned about said heat exchange tube but spaced apart therefrom to define a gas heating passage;

d. an outer insulative shell attached to the outside of said inner shell;

e. a plurality of heat exchange fins attached to the outside of said heat exchange tube and extending into said gas heating passage;

f. means for conveying cold gas into one end of said gas heating passage and for conveying heated gas from the other end;

g. a control valve connected to said conveying means for controlling the flow of gas therethrough;

h. a control system including an adjustable automatic reset timer connected to said control valve, said timer operable when energized to open the control valve for a predetermined period of time to deliver a burst of gas; and

i. heater control means including a thermostat for controlling the energization of said electrical heating element to maintain a predetermined temperature within said gas heating passage, said heater control means operable independently of said timer for continual energization of said electrical heating element under control of said thermostat, to store heat in said reservoir prior to delivery of a burst of gas by said timer.

3,846,617

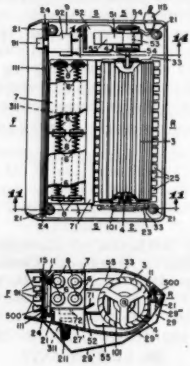
BLOWER AND HEATER UNIT

Dov Z. Glucksman, Newton Centre, Mass., assignor to Intermatic Incorporated, Spring Grove, Ill.

Continuation of Ser. No. 88,268, Nov. 10, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,820

Int. Cl. H05b *1/00;* **F24h** *3/04*

U.S. Cl. 219—370 **7 Claims**



1. A blower and heater unit including

a an upper shell of a synthetic resin and a lower complementary shell of a synthetic resin abutting at juxtaposed edges thereof and jointly forming a housing defining a space closed at the rear and at both sides and open at the front thereof;

b stud means projecting through said lower shell into said upper shell for clamping said upper shell against said lower shell;

c a bladed substantially cylindrical transverse flow blower rotor supported by shaft means and arranged at said closed rear of said housing, an electromotor including a stator and a rotor arranged within said housing in coaxial relation to said blower rotor for driving said blower rotor, a plurality of electric heater resistors arranged within said housing adjacent said open front thereof for heating the flow of air established by said blower rotor, a frame structure arranged within said housing supporting said plurality of heater resistors and a control switch arranged within said housing for controlling said electromotor and said plurality of heater resistors;

d said upper shell and said lower shell each including one of a pair of internal partitions arranged in a common plane at right angles to said shaft means of said blower rotor and supporting the end of said shaft means remote from said electromotor, said upper shell and said lower shell each defining one of a pair of grooves arranged in a common plane adjacent said open front of said housing, said lower shell being provided with perforations at the region thereof juxtaposed to said blower rotor forming an air intake for said blower rotor, and at least said lower shell including internal projections engaging said stator of said electromotor for positioning said electromotor and internal projections engaging said frame structure supporting said plurality of heater resistors for positioning said frame structure and said plurality of heater resistors; and

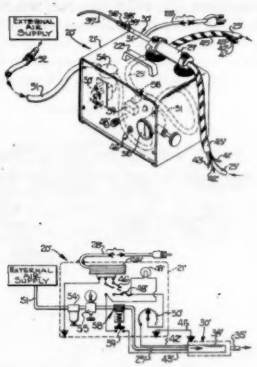
e a perforated plate forming a combined control panel and air discharge grille having edges projecting into said pair of grooves defined by said upper shell and said lower shell and closing said open front of said housing.

3,846,618

ELECTRIC HEATING APPARATUS FOR REMOVING TEXTILE WASTE MATERIAL

James H. Henderlite, III., Charlotte, N.C., assignor to Air Knife, Inc., Charlotte, N.C.

Filed Mar. 9, 1972, Ser. No. 233,107
Int. Cl. H05b *1/02*; **F24h** *3/04*; **B05b** *1/24*
U.S. Cl. 219—373 **1 Claim**



1. Apparatus comprising:

manually portable housing means for enclosing components of the apparatus and having handle means for accommodating ready portability to a location of use,

electrical supply conducting means extensible from within said housing means for delivering electrical current through said housing means,

elongate flexible air supply conduit means extending from said housing means and connectable with an external supply of pressurized air for delivering through said housing means a flowing stream of air having a predetermined volume rate of flow,

manipulable handle means for manual control over the direction of air,

elongate flexible air delivery conduit means extending between said housing means and said handle means for conducting the flowing stream of air from said housing means to said handle means in substantially unimpeded flow and for permitting application thereof at locations remote from said housing means,

electrical resistance heater means extending from said handle means and interposed in the flow path of said flowing stream of air for heating air to an elevated temperature,

electrical delivery conducting means extending between said housing means and said handle means for conducting electrical current to said heater means,

means for binding said delivery conducting means and said delivery conduit means together into a single bundle extending between said housing means and said handle means,

nozzle means extending from said heater means for directing heated air, and

control means mounted within said housing means and operatively interconnected with said conduit means and said conducting means for coordinating delivery of electrical current and air to said heater means and including:

air pressure electrical switch means interposed between said supply conduit means and said delivery conduit means for preventing energization of said heater means in the absence of the flowing stream of air and thereby protecting said heater means against failure otherwise possibly occurring due to energization thereof while no air is flowing therethrough,

means for adjustably regulating the pressure at which the flowing stream of air is delivered to said electrical heater means and thereby for varying the velocity at which heated air issues from said nozzle means, and

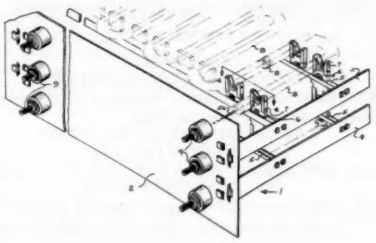
means for varying at least one characteristic of the electrical current flowing to said heater means and thereby varying the temperature at which air is delivered through said nozzle means.

3,846,619

OPEN COIL ELECTRIC HEATER

Lawrance W. Wightman, St. Louis; Howard C. Gebhart, Chesterfield, and Nick Tichy, Affton, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 12, 1973, Ser. No. 415,007
Int. Cl. H05b *3/06*
U.S. Cl. 219—532 **15 Claims**



1. In an open coil electric heater having at least one heater coil, and a frame containing said heater coil, the improvement comprising insulating means for insulating the frame from said heater coil, and clip means for holding said heater coil, said clip means being insulated from said frame by said insulating means, said clip means including a wall separated to provide a pair of flanges defining a groove therebetween, each of said flanges being rotated oppositely one another, said wall having a channel through it, said channel communicating with the groove defined by said flanges.

3,846,620

ELECTRICAL HEATING UNIT

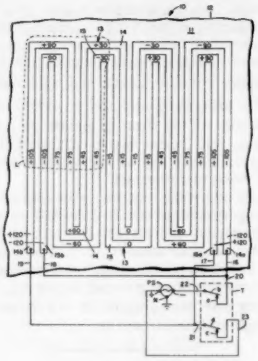
James P. Hocker, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,216
Int. Cl. H05b *3/16*, *3/74*
U.S. Cl. 219—543 **6 Claims**

1. An electrical heating unit comprising;

A. a panel of a glassy material,

B. a 240 volt heating element including first and second electrical resistance conductors in physical contact with a surface of said panel in a selected area of such panel and extending over such surface in first and second sinuous paths paralleling each other throughout the lengths thereof with the first and second ends of said first conductor being adjacent the second and first ends, respectively, of said second conductor,



C. first circuit means including a first set of normally closed and thermally actuated contacts for connecting said first ends of said conductors with each other and with one terminal of a commercial **240** volt source of alternating current, and

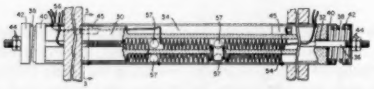
D. second circuit means including a second set of normally closed and thermally actuated contacts for connecting said second ends of said conductors with each other and with the opposite terminal of said current source.

3,846,621

FURNACE HEATING ELEMENT

Paul W. Roos, Marlboro, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.

Filed Sept. 21, 1973, Ser. No. 399,629
Int. Cl. H05b *3/02, 3/06*
U.S. Cl. 219—550 **6 Claims**



1. A heating element suitable for horizontal suspension by support at its opposite ends within a furnace operative in a predetermined temperature range comprising:

an elongated ceramic core having a plurality of longitudinal channels formed in the peripheral surface thereof and including:

at least one elongated unitary core section having flat end surfaces oriented in a plane perpendicular to the longitudinal axis of said core;

said at least one elongated core section when supported as aforesaid at temperatures within said predetermined temperature range being predisposed to sag and to place the lower portion thereof into tension;

electrical heating coils disposed longitudinally within said channels;

electrical connecting means for connection of said coils at said opposite ends to an external electrical power source;

a metal rod having the characteristic of retaining its tensile properties throughout said temperature range, said rod being disposed on the longitudinal axis of said core and extending beyond the ends thereof;

retaining means including perforated end pieces having flat faces confronting the respective flat end faces of said ceramic core and having an outer diameter at least equal to the cross sectional diameter of said core;

at least one compression spring disposed at at least one end of said rod and beyond said perforated end pieces;

spring retaining means including fastening means engaging said rod for maintaining said at least one spring in compression;

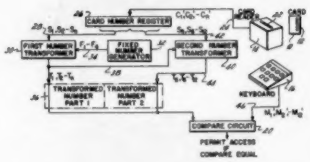
said rod being maintained in tension by compression of said at least one spring to thereby maintain the ceramic core continuously in compression throughout the entire cross section thereof during operation of said heating element at temperatures within said range whereby tensioning and subsequent cracking of said at least one elongated section is prevented.

3,846,622

ACCESS CONTROL APPARATUS

Martin R. Meyer, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Sept. 29, 1972, Ser. No. 293,595
Int. Cl. G07f *7/02;* **H04q** *5/02;* **G06k** *7/08, 5/00*
U.S. Cl. 235—61.7 B **9 Claims**



1. An apparatus for verifying that an authorized person is seeking entrance into a restricted area, the apparatus comprising in combination:

means for reading a multi-bit card number from a card presented by the person seeking entrance to the restricted area;

means for generating a multi-bit fixed number;

first number transforming means responsive to said fixed number and only part of said multi-bit read card number to form a multi-bit first part of a transformed number, said first part being logically related to the inputs to said first number transforming means;

second number transforming means responsive to the remaining part of said read card number and also responsive to said first part of said transformed number to form a multi-bit second part of a transformed number, said second part being logically related to the inputs to said second number transforming means; and

a comparing means for comparing said first and second parts of a transformed number with a memorized number entered by the person seeking entrance into the restricted area, a favorable comparison of these numbers being operative to permit the person to enter the restricted area.

3,846,623

SCANNING MEANS

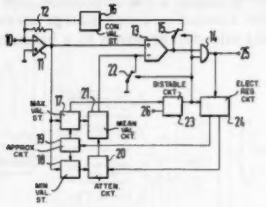
Norbert Wefers; Uwe Militz; Uwe Unglaube, all of Berlin, and Jan de Meer, Wurzburg, all of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany

Filed Feb. 22, 1973, Ser. No. 334,644

Claims priority, application Germany, Feb. 22, 1972, 22083199

Int. Cl. G06k 7/01; G08c 9/06

U.S. Cl. 235—61.11 E 17 Claims



1. A method for generating a pulse sequence signal of constant pulse amplitude from a bivalent signal having transitions between a maximum and a minimum amplitude value and having a superimposed unidirectional time-varying component, said method comprising the steps of comparing said signal with a controlled threshold value which is traversed by said signal at each transition thereof, storing the amplitude value of said signal present ahead of each transition, generating a mean value from said maximum and minimum amplitude values during a period of time following the beginning of a transition and employing said means value as the controlled threshold value for the next signal transition.

3,846,624

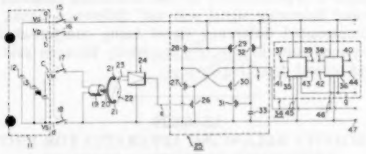
AUTOMATIC CLEARING DEVICE

Tsuyoshi Kawanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1973, Ser. No. 359,214

Int. Cl. G06c 15/42; G11c 11/00

U.S. Cl. 235—144 E 6 Claims



1. An automatic clearing device comprising:

storage means whose storage is to be cleared upon connection of a power source to said device;

synchronizing signal generating means for generating a synchronizing signal in accordance with revolutions of an electric motor driven by said power source;

clear signal generating means coupled to said synchronizing signal generating means for generating output, adapted to change from one state to another state upon connection of the power source and change from said another state to said one state upon arrival of said synchronizing signal; and

means coupled between said storage means and said signal generating means for applying as a clear signal to said storage means a signal resulting from the change of the state of said clear signal generating means.

3,846,625

COMPUTING DEVICE FOR AN INTERPOLATION

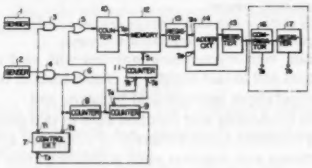
Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 21, 1973, Ser. No. 334,401

Claims priority, application Japan, Feb. 21, 1972, 47-17210

Int. Cl. G06f 1/02

U.S. Cl. 235—152 16 Claims



1. A computing device for interpolation of values comprising digital memory means for memorizing data corresponding to selected values ($x_1, x_2, \cdots x_n, y_1, y_2, \cdots y_n$) of variations of the values (x, y), address control means connected to said digital memory means for reading out needed data from said memory means, input means connected to said address control means for setting certain values of said variations of (x, y) into said address control means, adder circuit means connected to said memory means for accumulating said output data of said memory means, and control circuit means for controlling said input means, said address control means and said adder circuit means, whereby at first certain values along said variations being set into said address control means and then said needed data to be accumulated are read out and the read out address of said memory means is shifted continuously by operation of said address control means, wherein said address control means comprises a plurality of address counters providing counted values which define said read out address, each of said address counters providing each of said certain values of said variations (x, y) from said input means, and wherein each of said address counters has an upper counter means connected to said memory means and a lower counter means connected to said upper counter means for counting increments of ($\Delta x_1, \Delta x_2 \cdots \Delta x_n, \Delta y_1, \Delta y_2 \cdots \Delta y_n$) between each of said selected values ($x_1, x_2 \cdots x_n, y_1, y_2 \cdots y_n$) of each variation of ($x$, y).

3,846,626

ELECTRONIC DESK CALCULATOR WITH VERIFICATION FUNCTION

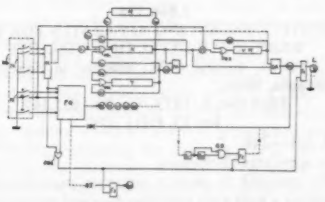
Kunio Yoshida, Kenjiro Tsugawa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1972, Ser. No. 319,234

Claims priority, application Japan, Dec. 29, 1971, 47-1045; Dec. 29, 1971, 47-1046; Feb. 25, 1972, 47-19868

Int. Cl. G06f 11/00

U.S. Cl. 235—153 BK 3 Claims



1. A key controlled electronic desk calculator, comprising: manually operated keyboard means having digit keys and

function keys with a preselected one of said function keys causing verification of computations;

a plurality of registers including a storage register and a verification register for retaining computed computations transferred thereto;

means connecting said storage register with said verification register for transferring computed computations from said storage register to said verification register;

a decoder connected with said digit keys and said storage register;

comparison means;

means connecting said storage register and said verification register with said comparison means;

program memory means connected with said comparison means and to said register to enable transfer of computed computations between said registers; and

means connecting said function keys to said program memory means to control transfer of computed computations between said registers upon a first actuation of said one key and to cause verification between a second computation subsequently computed and stored in said first register with said first computation stored in said verification register upon a second actuation of said one key.

3,846,627

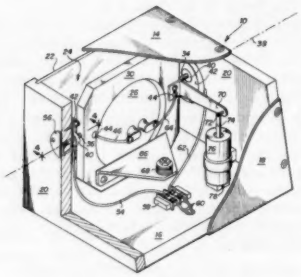
STABILIZED LAMP

Erle D. Chastain, Star Route, Gainsville, Tex. 76240

Filed Sept. 6, 1973, Ser. No. 394,840

Int. Cl. F21v *21/20*

U.S. Cl. 240—62.2 **7 Claims**



1. A self-adjusting lamp for mounting on a vehicle comprising a housing for attachment to said vehicle, a focused lamp means mounted in said housing to rotate about a horizontally extending axis, said lamp means mounted with its center of gravity located below said axis whereby said lamp means remains in a preselected attitude with respect to gravitational force as said vehicle moves; and means for varying the position of said center of gravity on said lamp means to alter the preselected attitude of said lamp means.

3,846,628

SENSITIVITY BALANCING APPARATUS FOR PHOTO RESPONSIVE DETECTING CIRCUITS

Gary L. Towne, Aurora, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 6, 1973, Ser. No. 422,167

Int. Cl. G01j *1/20*

U.S. Cl. 250—201 **10 Claims**

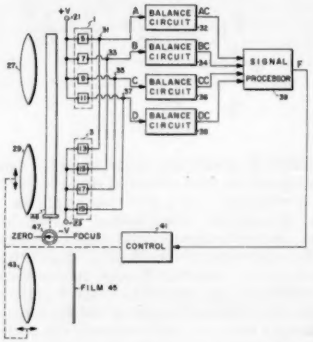
1. An apparatus comprising:

means arranged to receive radiation from an object for defining a light path including first and second discretely identifiable portions of said radiation;

first and second detecting devices positioned in said light path and arranged for sensing the intensity of said first and second discretely identifiable portions of said radiation to produce a difference signal at a common terminal representative of the difference therebetween;

circuit means connected to said common terminal;

means selectively operable between a first position in said light path, and a second position out of said light path, said selectively operable means, when in said first position, being effective to cause substantially equal amounts of radiation to fall on said first and second detecting devices, said circuit means including a storage means, a switching device connecting said common terminal with said storage means, said switching device being operable when said selectively operable means is in said first position for providing a low impedance path between said common terminal and said storage means, for rapidly charging said storage means to a balancing signal level



representative of the difference signal generated while said first and second detecting devices are substantially equally radiated, said switching device being further operable when said selectively operable means is in said second position for providing a high impedance path between said common terminal and said storage means to substantially preclude a discharging of said storage means, and amplifier means for comparing said stored balancing signal with said difference signal generated when said selectively operable means is in said second position to provide a compensated difference signal which is representative of the difference between said stored balancing signal and said difference signal, said compensated difference signal being compensated for any inequality in effective sensitivity between said first and second detecting devices.

3,846,629

SENSITIVITY BALANCING APPARATUS FOR PHOTO RESPONSIVE DETECTING CIRCUITS

Norman L. Stauffer, Englewood, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 6, 1973, Ser. No. 422,168

Int. Cl. G01j *1/20*

U.S. Cl. 431—22 **10 Claims**

1. An apparatus comprising:

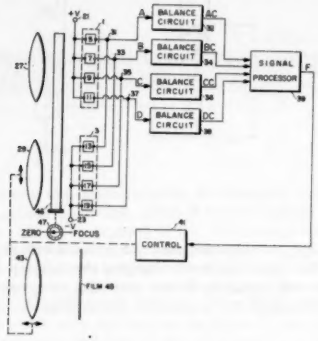
means arranged to receive radiation from an object for defining a light path including first and second discretely identifiable portions of said radiation;

first and second detecting devices positioned in said light path and arranged for sensing the intensity of said first and second discretely identifiable portions of said radiation to produce a difference signal at a common terminal representative of the difference therebetween;

circuit means connected to said common terminal;

means selectively operable between a first position in said light path, and a second position out of said light path, said selectively operable means, when in said first posi-

tion, being effective to cause substantially equal amounts of radiation to fall on said first and second detecting devices, said circuit means including means for storing a balancing signal representative of the difference signal appearing at said common terminal when said selectively operable means is in said first position, said circuit means further including means for combining said stored balanc-



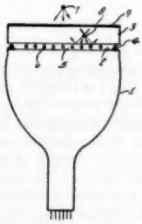
ing signal with said difference signal generated when said selectively operable means is in said second position to provide a compensated difference signal which is representative of the difference between said balancing signal and said difference signal, said compensated difference signal being compensated for any inequality in effective sensitivity between said first and second detecting devices.

3,846,630

METHOD FOR IDENTIFYING ELEMENTAL AREAS OF A PHOTOCATHODE

Avraham Suhami, 36 Oren St.; Benjamin Sabbah, 22 Hazalafin St.; Dan Inbar, 1080 Hanassi Blvd., all of Haifa; Arizi Yarom, 33 Hapalmach St., Jerusalem, and Dan Ben-Zeev, 4 Hanesher St., Haifa, all of Israel

Division of Ser. No. 1,198, Jan. 7, 1970. This application Feb. 4, 1972, Ser. No. 223,617
Int. Cl. H01j *29/70*
U.S. Cl. 250—207 **5 Claims**



1. A method of sampling the anode voltage of a photomultiplier tube for identifying the elemental area of its photocathode illuminated by a light event comprising:

a. providing a grid of electrically separate conductors adjacent the photocathode comprising a group of x conductors that cross a group of y conductors wherein:

$2^{(p-1)} < x \leq 2^p$ and

$2^{(q-1)} < y \leq 2^q$

where p and q are integers, and the projection of the crossing of a pair of conductors on the photocathode defines the centre of an elemental area thereon;

b. sequentially applying to the conductors, within the decay cime τ of the anode voltage resulting from the occurrence of a light event, $(p+q)$ sets of retarding pulses, each set comprising pulses are applied simultaneously to selected ones of the conductors, for producing in the anode voltage, valleys whose location and depth depend on the spatial location of the elemental area illuminated by the light event and the sequence in which the sets of retarding pulses are applied; and

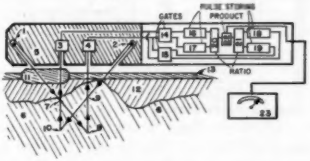
c. sampling the amplitude of the anode voltage at the same rate at which the sets of retarding pulses areapplied to the conductors.

3,846,631

GAMMA RAY DIFFERENTIAL DENSITY PROBE

Paul Kehler, South Bend, Ind., assignor to Applied Invention Corporation, Mishawaka, Ind.

Filed Mar. 13, 1972, Ser. No. 224,238
Int. Cl. G01v *5/00*
U.S. Cl. 250—269 **7 Claims**



1. A gamma ray density probe utilizing a first collimated gamma ray source, a second collimated gamma ray source, a first collimated gamma ray detector and a second collimated gamma ray detector, wherein said first and said second collimated gamma ray sources are located on two parallel planes placed at a distance from each other, with said first gamma ray source emitting gamma rays into a sample to be measured along at least one trajectory within the first of said two parallel planes and said second collimated gamma ray source emitting gamma rays into said sample along at least one trajectory within the second of said two parallel planes, with some of the gamma rays emitted by said first collimated gamma ray source being scattered under a geometrically predetermined scattering angle towards said second collimated gamma ray detector at a first location in said sample and along at least one trajectory that is intersecting said second of said two parallel planes at a second location in said sample, with some of the gamma rays emitted by said second collimated gamma ray source being scattered under said geometrically predetermined angle towards said first collimated gamma ray detector at a third location in said sample and along at least one trajectory that is intersecting said first of said two parallel planes at a fourth location in said sample, with some of the gamma rays emitted by said first collimated gamma ray source being scattered under said geometrically predetermined scattering angle towards said first collimated gamma ray detector at said fourth location in said sample and with some of the gamma rays emitted by said second collimated gamma ray source being scattered under said geometrically predetermined scattering angle towards said second collimated gamma ray detector at said second location in said sample, wherein a ratio is computed by dividing the counting rate of said first collimated gamma ray detector which is caused by gamma rays scattered from said fourth location by the counting rate of said second collimated gamma ray detector which is caused by gamma rays scattered from said first location, wherein an inverse ratio is computed by dividing the counting rate of said second collimated gamma ray detector which is caused by gamma rays scattered from said second location by the counting rate of said first collimated gamma ray detector which is caused by gamma rays scattered from said third location, and wherein a

product of said ratio and said inverse ratio is formed and displayed in a manner that allows interpretation of this product in terms of the average density of that volume of said sample that is located between said four locations in said sample.

3,846,632

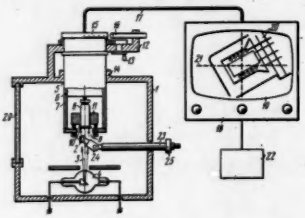
CLOSED-CIRCUIT TV INSPECTION X-RAY MICROSCOPE

Nikolai Vasilievich Rabodzei, Institutskays ulitsa, 6a, kv. 39; Evgeny Mikhailovich Ljubimov, ulitsa Lenina, 14, kv. 21; Mikhail Nikolaevich Nadobnikov, ulitsa Vokzalnaya, 21 kv. 7, and Alexandr Alexandrovich Krokhin, ulitsa Isentralnaya 12, kv. 8, all of Fryazino Moskovskoi oblasti, U.S.S.R.

Continuation-in-part of Ser. Nos. 90,262, Nov. 17, 1970, abandoned, and Ser. No. 50,431, Sept. 4, 1970. This application July 9, 1973, Ser. No. 377,776

Int. Cl. G03b *41/16*

U.S. Cl. 250—312 **4 Claims**



1. A closed-circuit TV inspection X-ray microscope comprising: a shielded specimen chamber to hold a specimen; an X-ray source intended for irradiation of the specimen with an X-ray beam and producing a shadow X-ray image of the inner structure of said specimen, said X-ray source being positioned so that said X-ray beam emerging from it illuminates said specimen chamber; said specimen chamber having a wall with an opening behind said specimen in the path of said X-ray beam and coaxial herewith; a shielding cylinder introduced through said opening coaxially with said X-ray beam and rotatable around its longitudinal axis; a transmitting TV camera contained in said shielding cylinder, said shielding cylinder having an opening at an end thereof facing said X-ray source; an X-ray sensitive TV pick-up tube to convert the X-ray shadow image of the specimen into a TV video signal, said pick-up tube being mounted in the interior of said transmitting TV camera coaxially therewith and oriented so that its target, on which said X-ray shadow image is projected, is perpendicular to the axis of said X-ray beam entering through said opening in said shielding cylinder; a turning means for rotating said transmitting TV camera with the TV pick-up tube around the axis of the X-ray beam; a TV monitor electrically connected to said TV camera; said TV monitor having a screen for viewing an enlarged image of the inner structure of said specimen; and means for producing an image of a cross-hair sight on said screen and for aligning the center of said cross-hair sight with the axis of said beam.

3,846,633

HIGH VOLTAGE GENERATOR FOR X-RAY DIAGNOSIS APPARATUS

Denes Romandi, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

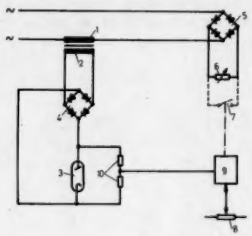
Filed Nov. 16, 1973, Ser. No. 416,354

Claims priority, application Germany, Nov. 27, 1972, 2258085

Int. Cl. H05g *1/20*

U.S. Cl. 250—402 **4 Claims**

1. A high voltage generator for X-ray daignosis apparatus for use with an X-ray tube and a source of alternating current, the generator comprising a high voltage transformer having at least one primary winding connected to said source and at least one secondary winding connected to said X-ray tube, a circuit connected to said primary winding and having a rectifier bridge, and adjusting means connected with said rectifier bridge for high voltage by changing the primary alternating voltage, said adjusting means consisting of a variable resistance connected to the outlet of the rectifier.



3,846,634

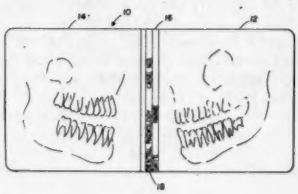
METHOD FOR PRINTING AN IDENTIFYING LEGEND ON A PANORAMIC DENTAL X-RAY FILM

Robert D. Fleming, 675 Pelzer Dr., Iowa City, Iowa 29464

Filed Mar. 14, 1973, Ser. No. 341,096

Int. Cl. G03b *41/16*

U.S. Cl. 250—476 **2 Claims**



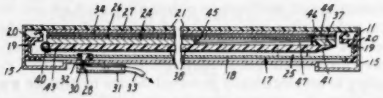
1. A method for printing an identifying legend on dental X-ray film of the type having an unexposed area in the center of the film, comprising the steps of: exposing a portion of the film to X-rays during a scan of one side of a patient's dental structures; stopping the exposure to X-rays for a brief time to allow repositioning of the patient relative to the source of X-rays; exposing another portion of the film to X-rays during a scan of the other side of the patient's dental structures thereby producing a single film showing both the right and left sides of the patient's dental structures, but with an unexposed area on the film between said sides; providing in a darkroom a light source whose path is confined to an area no greater than said unexposed area of said film; positioning in the path of said light source a translucent material containing the desired identifying information printed thereon; positioning said film with the unexposed area therof in the path of said light source and with said material between the film and light source; exposing the said unexposed area of said film by activating said light source; and processing the undeveloped film to produce a film showing the radiographic anatomy of the patient in a single film with a darkened central portion there between containing the identifying information permanently imprinted thereon.

3,846,635

FILM-HOLDER FOR EXPOSING X-RAY FILM

Edward C. Shaffer, Saint Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 266,125, June 26, 1972, abandoned. This application May 25, 1973, Ser. No. 363,966
Int. Cl. G03b 41/16
U.S. Cl. 250—480 17 Claims



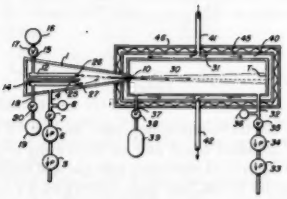
1. A vacuum film-holder adapted for mounting in a bucky tray of a radiographic table where it may be rapidly loaded with x-ray film to be exposed at the table, comprising 1) a shallow open-topped receptacle that comprises a rigid bottom plate and upwardly extending sidewalls which comprise at least at their upper extremity a resilient gasket member that extends continuously around the open top of the receptacle and whose upper edge defines a single plane; 2) an elastically bendable top plate attached to the receptacle in position to rest against the upper edge of the gasket member to close the receptacle and adapted to be drawn toward the bottom plate a uniform amount over the whole area enclosed by the gasket member; 3) a pressure plate supported above and parallel to the bottom plate: 4) first and second intensifying screens disposed between the pressure plate and the top plate; and 5) an exhaust port located in the receptacle or top plate for attachment to a vacuum source, whereby a vacuum may be formed within the film-holder to draw the top plate toward the bottom plate and tightly sandwich film between the two intensifying screens.

3,846,636

METHOD AND MEANS FOR UTILIZING ACCELERATED NEUTRAL PARTICLES

Phyllis Joan Zehr, Claymont, Del.; Monita May Thorp Lank, and Psych Lank, both of Media, Pa., assignors to Reactor Accelerator Development International, Inc., Claymont, Del.

Filed Aug. 31, 1971, Ser. No. 176,584
Int. Cl. G21g 3/00
U.S. Cl. 250—499 14 Claims



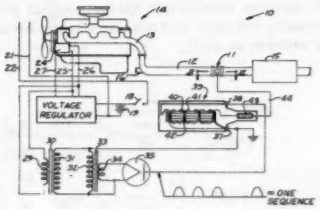
1. The method of producing a low to high velocity neutral particle beam which comprises generating and accelerating to a high velocity a substantially rectilinear stream of positively charged particles, generating and accelerating to a high velocity a substantially rectilinear stream of negatively charged particles, directing them along substantially parallel but converging paths and into a single beam whereby the charges carried by the positively charged particles are neutralized by the charges carried by the negatively charged particles and combined in a low to high high velocity neutral particle beam.

3,846,637

APPARATUS FOR ELIMINATING NOXIOUS GASES FROM THE EXHAUST OF AN INTERNAL COMBUSTION ENGINE

Joseph Gettinger, 2115 W. Chare Ave., Chicago, Ill. 60645

Continuation-in-part of Ser. No. 96,859, Dec. 10, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 395,404
Int. Cl. F01n 3/00; B01j 1/14
U.S. Cl. 250—546 4 Claims



1. In an arrangement for use in decomposing exhaust gas in an internal combustion engine exhaust system including an exhaust conduit and a muffler, a detachable conduit section for disposition in said exhaust conduit ahead of said muffler, two oscillatory terminals in said detachable conduit section, one of said terminals being an anode terminal and the other being a multi-electrode cathode terminal with there being a face-to-face separation between said anode terminal and said cathode terminal of at least ½ inch, said anode terminal comprising a square base pyramidal shape consisting of two parts and joined together; one of said two part being square base plate of not less than one-eighth of an inch in thickness of aluminum-nickel alloy and the other of said two parts being pyramidal shape of copper, a copper wire connected at the zenith of said shape and serving as a ground connection, a square block of ceramic material, said pyramidal shape of copper being rigidly incased within said square block of ceramic material, said base plate constituting the anode surface, said multi-electrode terminal comprising a square block of high heat resistance and high electrically insulating material and at least fifteen electrode wires individually and rigidly incased in staggered linear formation in said material within the width of one inch of said block, said block having a square inner end surface containing the inner ends of said electrode wires in spaced face to face relationship to said square inner surface of said anode terminal and defining therewith a gap for passage of residual exhaust gases therethrough and for formation of multi-oscillatory streams of free electrons therewithin, said block of said multi-electrode having an outer end of square shape with the outer ends of said electrode wires being arranged in a two linear staggered formation and said outer ends of said electrodes are flush with the ceramic material and are coated with a silicone substance.

ERRATUM

For Class 260—88 see:
Patent No. 3,846,833

3,846,638

IMPROVED COUPLING ARRANGEMENT FOR POWER LINE CARRIER SYSTEMS

Daniel L. Wetherell, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Continuation-in-part of Ser. No. 294,244, Oct. 2, 1972, abandoned. This application Sept. 6, 1973, Ser. No. 394,559
Int. Cl. H04m 11/00
U.S. Cl. 307—3 8 Claims

1. In a power line carrier system, an improved arrangement for coupling the carrier system to at least two phase wires of

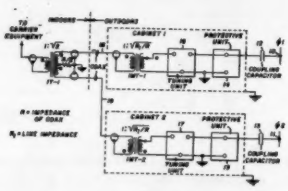
an electrical power transmission line, said improved arrangement comprising:

a. first and second impedance matching transformers each having coupled primary and secondary windings;

b. means for coupling said primary winding of said first impedance matching transformer to a first phase wire of said electrical power transmission line;

c. means for coupling said primary winding of said second impedance matching transformer to a second phase wire of said electrical power transmission line;

d. an isolation transformer having coupled primary and secondary windings, said primary winding having a center tap between its ends;



e. means, including at least one coaxial line, for respectively connecting one end of each of said secondary windings of said impedance matching transformers to one of said ends of said primary winding of said isolation transformer;

f. a common impedance having one end connected to said center tap of said isolation transformer primary winding and the other end connected to the other ends of said secondary windings of said impedance matching transformers;

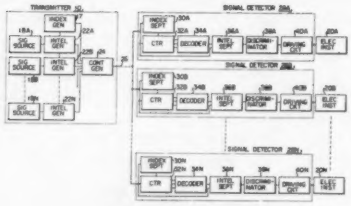
g. and a coaxial line connected to said secondary winding of said isolation transformer for connection to a carrier system.

3,846,639

CONTROL SYSTEM FOR ELECTRIC INSTALLATIONS FOR USE ON VEHICLE

Atsushi Ueda, and Mitsuaki Ishii, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,480
Int. Cl. G08c *3/00;* **H02g** *3/00*
U.S. Cl. 307—9 **4 Claims**



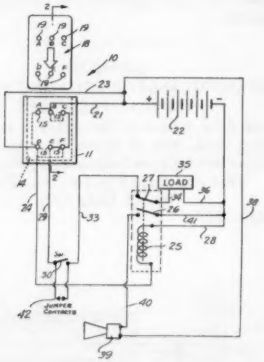
1. A control system for controlling electrically powered devices provided on a vehicle or the like, comprising in combination, a transmitter unit comprising a plurality of signal sources providing output signals having information content, each of said signal sources corresponding to an electrically powered device to be controlled, an index generator circuit for generating index pulses, an intelligence generator circuit, circuit means for applying said index pulses and said signal sources output signals to said intelligence generator circuit to generate intelligence pulses having said information content of said signal sources output signals, and a control generator circuit for receiving said index pulses and said intelligence pulses to provide control pulse trains comprised of said index pulses and said intelligence pulses; a transmission line comprising a single conductor connected to an output of said control generator circuit; and a plurality of signal detector means connected to said transmission line for receiving said control pulse trains, each of said signal detector means corresponding to an electrically powered device, each of said signal detector means comprising means for receiving said control pulse trains for separating said index pulses from said pulse trains, a counter circuit, means for applying said control pulse trains and said separated index pulses to said counter circuit for counting said intelligence pulses after each of said intelligence pulses after said separated index pulses are applied thereto; a decoder circuit connected to an output of said counter for detecting a predetermined count thereof corresponding to an electrically powered device to provide a separation pulse in response thereto, an intelligence separation circuit receptive of said separation pulse and said control pulse trains to separate from said control pulse trains intelligence pulses corresponding to said predetermined count of said counter and said electrically powered device, a pulse discrimination circuit receptive of said intelligence pulses separated by said intelligence separation circuit for providing output signals representative of said information content thereof, and a driving circuit receptive of said pulse discrimination circuit output signals for driving a corresponding electrically powered device in response to said output signals from said pulse discrimination circuit.

3,846,640

ELECTRICAL COMBINATION KEY LOCK

Nicholas W. Mihlhauser, PO Box 3694, Eureka, Calif. 95501

Filed Nov. 16, 1972, Ser. No. 307,243
Int. Cl. B60r *25/04*
U.S. Cl. 307—10 AT **1 Claim**



1. In an electric combination card lock for a system, an electrically actuated alarm and an electrically energized engine, a lock formed of insulating material and having a generally rectangular shape, said lock embodying a relatively thin card receiving pocket extending substantially all the way therethrough, a plurality of spaced contact elements embedded in the lock on opposite sides of said pocket and said contact elements coinciding with the surfaces of the pocket, insulators on the outer surfaces of said contact elements, electric circuits separately connecting at least one of said contact elements to an electrically actuated alarm circuit and at least one other of said contact elements to an electrically energized engine circuit, a relatively thin flat key card formed of insulating material insertable in the pocket of said lock, a plurality of selectively conductive and nonconductive balls rigidly mounted in said key card between opposite sides of the card with each ball extending from opposite faces of said card,

said card with said conductive balls being adapted to electrically interconnect at least some of the contacts in the pocket of said lock to complete a circuit to said alarm, to said engine, or to both said alarm and said engine, and a hand control switch battery electrically connected in said circuits.

3,846,641

CONTROL SYSTEM FOR A PLURALITY OF LOADS

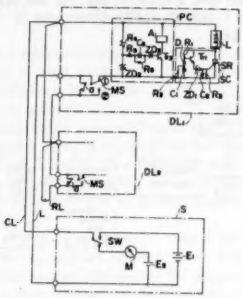
Yoshihiro Eguchi, Tokyo, Japan, assignor to Hochiki Kabushiki Kaisha

Filed Sept. 10, 1973, Ser. No. 396,125

Claims priority, application Japan, Sept. 22, 1972, 47-95699

Int. Cl. H02j *3/14*

U.S. Cl. 307—41 **4 Claims**



1. A control system for sequentially operating a plurality of loads connected in parallel across supply conductors, said control system comprising a plurality of switching circuits for respective loads, each one of said switching circuits being closed a predetermined interval after the application of the operating voltage for connecting the associated load to said supply conductors, a plurality of transfer switches for connecting the loads to said supply conductors in the second and succeeding stages, means responsive to the operation of the load in the preceding stage for operating the transfer switch of the succeeding stage to connect the load of said succeeding stage across said supply conductors, a plurality of relay contacts respectively connected in parallel with said transfer switches, relay means connected in preceding stages for opening said contacts when the loads and said switching circuits in the preceding stages are energized, and for closing said contacts after a predetermined interval, and a terminal impedance element connected across the end terminals of said supply conductors.

3,846,642

SYNCHRONIZED IMAGE INTENSIFIER GATING

Donald Nichols, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 7, 1973, Ser. No. 423,046

Int. Cl. H03k *17/00*

U.S. Cl. 307—239 **7 Claims**

1. A gating control device for predicting an incoming pulse of a pulse train to an image intensifier having a gate and for turning on said image intensifier, comprising:

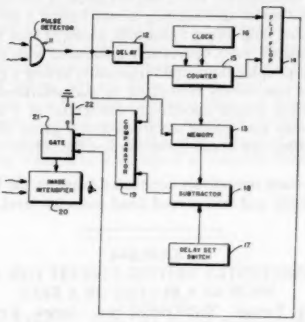
pulse detection means;

means for determining the interval between successive pulses;

means for storing an empirical value representative of the internal delays of the circuitry of said gating control device;

means for determining the difference between said interval and said empirical value; and

means for comparing said difference with the interval to a next succeeding incoming pulse and for providing a gating pulse to said gate when these values are equal, thereby turning on the image intensifier in time to observe the predicted incoming pulse.



3,846,643

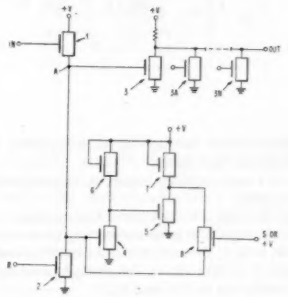
DELAYLESS TRANSISTOR LATCH CIRCUIT

William M. Chu, Poughkeepsie; James M. Lee, and Gary C. Luckett, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,272

Int. Cl. H03k *17/60, 3/286*

U.S. Cl. 307—247 R **5 Claims**



1. A semiconductor circuit for providing a latched output signal without introducing circuit delay due to the latching function comprising:

an input node;

an intermediate node;

an output node;

a field effect transistor having a gating electrode and two gated electrodes, the first of said gated electrodes being operatively connected to a first fixed potential level, the second of said gated electrodes being operatively connected to said intermediate node, said gating electrode being operatively connected to said input node;

a plurality of parallel connected field effect transistor gates each having two gated electrodes and a gating electrode, one of said plurality of field effect transistors having its gating electrode operatively connected to said intermediate node, the first each of the gated electrodes of said plurality being operatively connected to said output node, the second of the gated electrodes of said plurality being operatively connected to a second fixed potential level; and

latching means operatively connected to said intermediate node, responsive to and holding the signal on said intermediate node, thereby latching the signal at said output node, said latching means having a pair of cross-coupled field effect transistors, a pair of load field effect transistors, each operatively associated with one of said cross-coupled field effect transistors having a gating electrode operatively connected to said intermediate node, isolation means operatively connected in a series path between said gating electrode and a gated electrode of the other one of said cross-coupled field effect transistors; and

reset means operatively connected between the intermediate node and said second fixed potential level.

3,846,644

INTERMITTENTLY DRIVING CIRCUIT FOR A LOAD SUCH AS A BUZZER OR A BELL

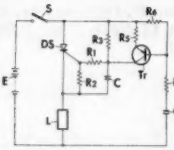
Shigeyuki Takagi, Nishikasugai-gun; Isamu Kawashima, Chita-gun; Katsuyuki Takagi, Gifu, and Sohei Hibino, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Pref., Japan

Division of Ser. No. 206,362, Dec. 9, 1971, abandoned. This application July 2, 1973, Ser. No. 375,593

Claims priority, application Japan, Dec. 11, 1970, 45-109349

Int. Cl. H03k *17/72, 17/26, 17/04*

U.S. Cl. 307—252 J **3 Claims**



1. An intermittent driving circuit, comprising in combination: an SCR having a gate;

a capacitor and coupling means connecting said capacitor to said gate;

a voltage source, a switch and a first resistor;

means defining a first loop connecting in series said voltage source, switch, first resistor and capacitor and responsive to closure of said switch for charging said capacitor to a level sufficient to fire said SCR;

means defining a second loop connecting in series said SCR, said voltage source and said switch for supplying sufficient SCR anode current to maintain SCR conduction when said second loop is closed;

a self interrupting load and means connecting same in series in said first and second loops for interrupting current flow through said second loop after energization by SCR current flow in said second loop;

means defining a third loop omitting said self interrupting load and connecting in series said SCR, said capacitor and at least said first resistor for discharging said capacitor through at least said first resistor to the anode of said SCR over a first time period independent of SCR conduction through said self interrupting load and for thereafter turning off said SCR upon simultaneous occurrence of capacitor discharge current less than the anode holding current of said SCR and a current interruption by said self interrupting load;

a transistor having collector and emitter electrodes connected between said capacitor and the anode of said SCR and a base bias circuit for said transistor connected across said series SCR and self interrupting load, said transistor having a base electrode connected intermediate the ends of said bias circuit, the collector and emitter terminals of said transistor being coupled in series with a second resistor across said first resistor, said base bias circuit including a resistive voltage divider and a further capacitor in series, whereby upon closure of said switch said transistor rapidly charges said first mentioned capacitor so as to substantially immediately cause said SCR to drive said self interrupting load but wherein said transistor is non-conductive for subsequent energizations of said self interrupting load by said SCR.

3,846,645

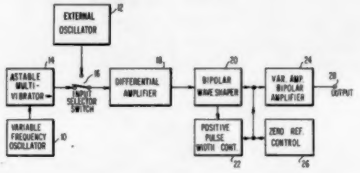
BI-POLAR PULSE GENERATOR

Robert H. Kim, Seoul, South Korea, and Lawrence D. White, Bethesda, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1973, Ser. No. 407,010

Int. Cl. H03k *4/00, 5/04*

U.S. Cl. 307—260 **11 Claims**



1. A bi-polar signal generator providing an output having selectively variable waveform characteristics, comprising in combination:

a signal source generating a periodic waveform of a selected frequency;

first circuit means coupled to said signal source and being operable in response to said periodic waveform to provide a bi-polar waveform signal of said selected frequency;

second circuit means coupled to said first circuit means and being operable in response to said bi-polar waveform signal to provide a bi-polar square wave signal having positive and negative signal portions;

third circuit means coupled to said second circuit means and being responsive to the bi-polar square wave signal to provide a bi-polar output signal; and

fourth circuit means coupled to said second and third circuit means and being operable in response to said positive signal portion of said bi-polar square wave signal to selectively vary the pulsewidth of the positive signal portion of said bi-polar output signal;

fifth circuit means coupled to said third and fourth circuit means and being operable in conjunction with said fourth circuit means to selectively vary the voltage amplitude of the waveform baseline existing intermediate said positive and negative signal portions of said bi-polar output signal when said positive signal portion is less than its maximum possible pulsewidth.

3,846,646

CONTROL APPARATUS FOR SUPPLYING OPERATING POTENTIALS

Edwin F. Peters, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1972, Ser. No. 313,349

Int. Cl. H03k *17/04;* **G06k** *15/18;* **H05b** *41/29*

U.S. Cl. 307—268 **11 Claims**

1. In a system for supplying operating potential to a load device wherein at least two transversely oriented conductors

are dielectrically isolated from a gas discharge medium between said conductors, comprising

a. voltage wave form generator means having an output means adapted to be connected to a transverse conductor;

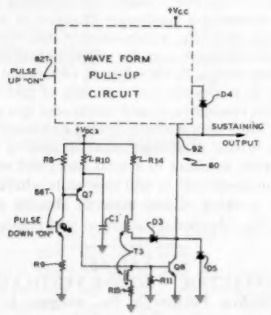
b. said wave form generating means including at least two sections, a first of said sections being operative to connect a first point at a first potential level to said output means while a second of said sections is operative to connect a second point at second potential level different from said first potential level to said output means;

c. one of said output sections including an output transistor connected as a switching means, said transistor having collector, base, and emitter electrodes and a collector-base junction, the emitter electrode to collector electrode current path through said transistor being connected in series between said output means and the point at a potential level associated with said one of said output sections;

d. means for selectively applying turn-on signals to the base electrode of said output transistor means, said signals being sufficient in magnitude to drive said transistor means into saturation; and

e. means responsive to saturation of said transistor and the removal of a turn-on signal from the base electrode for establishing current flow through said collector-base junction of said transistor means to reverse bias said collector-base junction to enable said transistor to turn off quickly;

f. said reverse bias establishing means including a transformer having primary and secondary windings, an isolating rectifier means, and means for connecting one side of a reverse bias source to said primary winding of said transformer;



g. said primary winding being connected in series with said isolating rectifier means between said bias source connecting means and said collector electrode of said transistor means, said isolating rectifier being connected in said series circuit to be reverse biased by potential levels on said collector electrode which are greater in magnitude than that of the reverse bias source thereby preventing current flow from said collector electrode through said primary winding;

h. said secondary winding being connected between said base electrode of said transistor and the other side of the reverse bias source, the emitter electrode of said transistor having a circuit connection to said other side of said reverse bias source;

i. the attainment of an "on" condition of said transistor means wherein the internal resistance of the collector-emitter circuit drops below a predetermined value which, in combination with current flow therethrough from the output potential level being controlled, provides a voltage drop across said emitter-collector circuit which is less than the potential of the reverse bias source enabling current flow from said reverse bias source through said primary winding and said isolating rectifier means in the forward direction to said collector electrode;

j. current flow in said primary winding from said reverse bias source inducing a voltage on said secondary winding which causes current flow through said collector-base junction in a direction to reverse bias said collector-base junction and discharge excess minority carriers from the saturated junction to enable said transistor to turn off quickly when a turn-on signal is removed from the base electrode.

3,846,647

TRIGGER CIRCUIT FOR USE WITH MULTIVIBRATORS

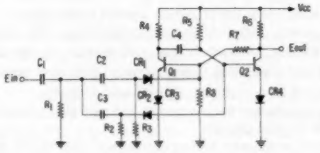
Kenji Tanimoto, 3-5, Akasaka 3-chome Minatoku, Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,752

Claims priority, application Japan, Dec. 23, 1971, 46-104091

Int. Cl. H03k *3/284*

U.S. Cl. 307—273 **4 Claims**



1. A monostable multivibrator including trigger circuit therefor comprising:

a single monostable multivibrator means having a normally conducting transistor with a collector, emitter, and base and a normally non-conducting transistor with a collector, emitter, and base;

trigger means including means responsive to the positive-going transitions in an input pulse signal for triggering said normally non-conducting transistor on to thereby switch said monostable multivibrator means to its unstable state for a predetermined length of time which is set to be always shorter in duration than said input signal; and

said trigger means including means responsive to the negative-going transitions in said input pulse signal for triggering said normally conducting transistor off to thereby again switch said monostable multivibrator to its unstable state for said predetermined length of time,

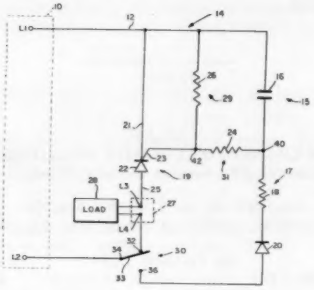
said input signal being a pulse train and said trigger means including means for differentiating said input pulse train so that positive spikes are produced for each positive-going transition in the pulse train and applied to said one transistor and negative spikes are produced for the negative-going transitions and applied to said other transistor, said trigger means further including a first diode having one pole connected to said differentiating means and its other pole directly connected to the base of said normally non-conducting transistor and a second diode having one pole connected to said differentiating means and its other pole directly connected to the base of said normally conducting transistor, both said diodes being connected to their respective transistors at the same time.

3,846,648

SOLID-STATE TIMER SWITCH PROVIDING AC POWER TO A LOAD FOR A PREDETERMINED TIME AFTER A MAIN SOURCE OF POWER IS REMOVED

Charles E. Scott, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed June 18, 1973, Ser. No. 370,958
Int. Cl. H03k 17/26
U.S. Cl. 307—293 8 Claims



1. A solid-state timer switch circuit comprising:
a. a power terminal means comprising first and second terminals for connecting said circuit to an alternating current electrical power source, said first terminal connected to a common side of said circuit;
b. a capacitance means connected one side to said common side of said circuit;
c. a first resistance means connected one side to the second side of said capacitance means;
d. a diode connected cathode to the other side of said first resistance means;
e. a solid-state switching means having terminals one of which is connected to said common side of said circuit;
f. a second resistance means connected one side to another terminal of said solid-state switching means and another side to a junction of said first resistance means and said capacitance means;
g. a third resistance means connected one side to said common side of said circuit and another side to said solid-state switching means;
h. a load connecting means including third and fourth terminals, said third terminal connected to said solid-state switching means; and
i. a single-pole double-throw switch, a normally closed pole of which is connected to said fourth terminal, a common pole of which is connected to said second terminal and a normally open pole of which is connected to an anode of said diode.

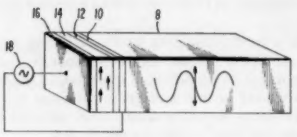
3,846,649

PIEZOELECTRIC TRANSDUCER COMPRISING ORIENTED ZINC OXIDE FILM AND METHOD OF MANUFACTURE

Hans Wilhelm Lehmann, Hedingen, and Roland Widmer, Rumlang, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed June 18, 1973, Ser. No. 370,616
Int. Cl. H01v 7/02; H04r 17/00
U.S. Cl. 310—8 5 Claims

1. A piezoelectric transducer comprising a polycrystalline film of parallel-oriented zinc oxide on a substrate comprising either a film of zinc, a film of In_2O_3 or a film of In_2O_3/SnO_2



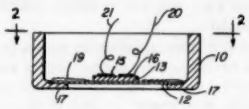
capable of producing a parallel oriented film of ZnO, said last mentioned film being adhered to a body surface.

3,846,650

ELECTROACOUSTIC TRANSDUCER OF THE VIBRATILE DIAPHRAGM TYPE WITH CONTROLLED UNIFORMITY OF PERFORMANCE CHARACTERISTICS AND METHOD FOR CONTROLLING UNIFORMITY

Gilbert C. Barrow, Scituate, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Filed Oct. 8, 1970, Ser. No. 79,219
Int. Cl. H04r 17/00
U.S. Cl. 310—8.2 8 Claims



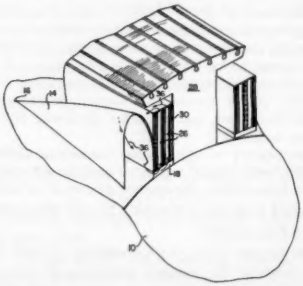
1. An electroacoustic transducer comprising a rigid housing structure including a diaphragm attached at its periphery to said housing structure, a piezoelectric disc rigidly bonded to one side of said diaphragm for vibrating said diaphragm, and means comprising a flexible film of vibrational lossy material coating at least a portion of a surface of said diaphragm for lowering the resonance of said transducer to a predetermined frequency, said lossy material having a characteristic wherein it adheres to said diaphragm when applied in a liquid state, and thereafter solidifies to a solid state, said material further having a characteristic in said solid state wherein the internal molecular working of said material absorbs energy without distorting the vibrational pattern of said diaphragm.

3,846,651

DYNAMOELECTRIC MACHINE VENTILATING SYSTEM

Anil K. Mishra, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 12, 1973, Ser. No. 369,328
Int. Cl. H02k 1/32
U.S. Cl. 310—61 9 Claims



1. A dynamoelectric machine comprising:
a stator having windings thereon,

a shaft extending axially and centrally through said stator, a rotor mounted on said shaft, said rotor comprising a plurality of pole pieces, a winding positioned on each of said pole pieces, said pole pieces defining an interpolar space therebetween, said rotor and said stator defining an annular gap therebetween,

said windings each having at least one spacer member disposed therein, said spacer member being fabricated of a non-conducting, non-magnetic material, said spacer member being disposed at a predetermined position within said windings, the disposition of said spacer member within said windings forming at least one cooling duct extending in a generally radial direction through said winding,

means for providing an axial flow of coolant fluid, and,

means directing said coolant fluid through said radial cooling ducts,

said means comprising a baffle member mounted on said rotor, said baffle member adapted to deflect said axial flow of coolant fluid into said radial cooling ducts.

3,846,652

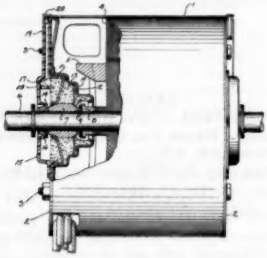
UNITARY LUBRICATING AND DUST CAP ASSEMBLY

Robert E. Lykes, Tipp City, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 15, 1974, Ser. No. 433,554

Int. Cl. H02k *5/16*

U.S. Cl. 310—90 **7 Claims**



1. An oil and dust cap for assembly with a dynamoelectric machine having a stator defining a bore, a rotor secured to a shaft extending in said bore, and at least one bearing supporting the shaft in the bore, and a shell surrounding the stator and an end frame secured thereto and receiving said shaft and supporting the bearing and an oil receiving wick, said oil and dust cap characterized by a one-piece plastic construction having a hub assembled around the shaft at the end of the bore with a radially projecting wall extending therefrom and providing a dust cap over the outer end of the motor, an oil tube integrally formed with the dust cap and extending to adjacent the circumference of the end frame to receive lubricating oil and carry the oil for delivery to said wick, means to close the upper end of the oil tube, and means securing the dust cap to the end frame.

3,846,653

UNIPOLAR ELECTRIC TRANSMISSION

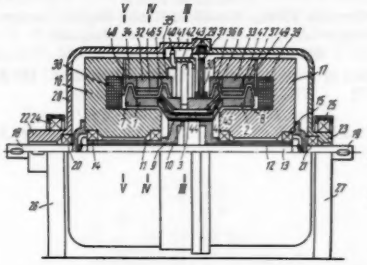
Boris Evdokimovich Korotenko; Vitaly Borisovich Korotenko, both of pereulok Armyansky 1/3, kv. 15, and Pavel Korneevich Shtepa, ulitsa Pushkinskaya 52, kv. 177, all of Kharkov, U.S.S.R.

Filed Mar. 26, 1973, Ser. No. 345,200

Int. Cl. H02k *49/12*

U.S. Cl. 310—102 **3 Claims**

1. A unipolar electric transmission comprising at least two coaxial arcylic machines with liquid-metal slip rings, which are combined into an adjustable-voltage system; a power circuit of each said acyclic machine including two operating current conductors, each formed of respectively a rotatable armature and a reactor; the armature of one of said acyclic machines connected to the armature of the other acyclic machine for joint rotation thereof; shafts for said acyclic machines, each said shaft being coupled to the reactor of a respective acyclic machine for their rotation; a casing for transmitting rotation to the interconnected armatures of the acyclic machines; a device for supplying liquid metal to the liquid-metal slip rings, comprising first and second inlet conduits having the respec-



tive inlet ends thereof placed at a greater radial distance from the axis of the transmission than their respective outlet ends; said first inlet conduit being coupled to a rotary magnetic circuit of the generator of the unipolar transmission, and said second inlet conduit being coupled to the armatures of the unipolar transmission; the inlet end of the first inlet conduit being located within a cavity containing liquid metal which is enclosed by the casing of the transmission, and the outlet end of the first conduit communicating with an annular groove which engages the inlet end of the second conduit.

3,846,654

VACUUM IMAGE CONVERTER

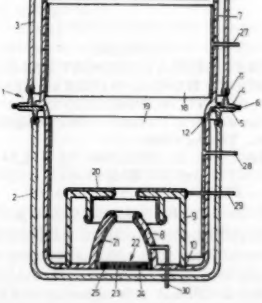
Karl Franz, Erlangen, and Hermann Christigau, Furth, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 8, 1973, Ser. No. 339,228

Claims priority, application Germany, Mar. 15, 1972, 2212579

Int. Cl. H01j *31/50, 39/00, 39/04*

U.S. Cl. 313—94 **3 Claims**



1. A vacuum image converter, comprising a vacuum flask, a cathode within said flask for releasing an electron ray bun-

dle, an anode within said flask and spaced from said cathode for receiving said electron ray bundle and an electrode system actuating said bundle of electrons and said vacuum image converter further comprising a carrier disposed within said vacuum flask consisting of an electrically insulating substance, said electrode system comprising a plurality of electrodes located between said cathode and said anode and mounted as electrically conducting coatings upon said carrier, said carrier having the shape of a pot with a bottom enclosing the anode and a top constituting a cover carrying said anode.

3,846,655

SPARKING PLUG

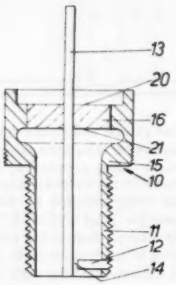
John Meredith Thring, Woodford Green, England, assignor to Gunson's Colorplugs Limited, London, England

Filed Jan. 4, 1973, Ser. No. 320,844

Claims priority, application Great Britain, Jan. 19, 1972, 2548/72

Int. Cl. H01t *13/12, 13/20, 13/38*

U.S. Cl. 313—118 **10 Claims**



1. A sparking plug comprising a metal tubular housing, a housing electrode provided on a portion of said housing, a metal central electrode which is mounted within and spaced from the housing and extends axially thereof, the central and housing electrodes being made of different metals and being separated from each other by a spark gap, and an annular, translucent insulator disc which is mounted within the housing and is subjected to radial compression by the latter to effect sealing therebetween, the central electrode extending through and being sealed to the insulator disc, the coefficient of thermal expansion of the housing, throughout a predetermined temperature range, being substantially greater than that of the insulator disc, and the coefficient of thermal expansion of the insulator disc being substantially the same as that of the central electrode throughout the said predetermined temperature range.

3,846,656

MULTICELLED DISPLAY/MEMORY GAS DISCHARGE DEVICE HAVING INTEGRAL CELL INTERCONNECTIONS

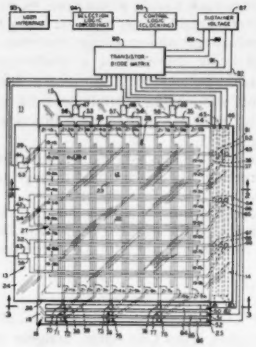
Jerry D. Schermerhorn, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 22, 1973, Ser. No. 372,541

Int. Cl. H01l *61/00*

U.S. Cl. 313—188 **19 Claims**

1. A conductor array for a gaseous discharge display/memory panel comprising a non-conductive substrate; a plurality of closely spaced lines of conductive material on said substrate; a display area of said substrate mounted lines adapted to be enclosed; a terminal strip region of said substrate and said substrate mounted lines extending beyond said display area; a dielectric layer over said substrate mounted lines in said terminal strip region, said layer having apertures through its thickness which are in registry with and intersect with predetermined ones of said lines along predetermined paths which cross a plurality of said lines; and display connector



lines formed as continuous strips of conductive material extending along said predetermined paths and into the apertures intersected by said paths to conductively engage said lines of conductive material on said substrate.

3,846,657

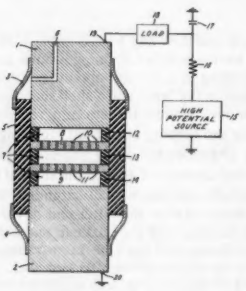
FAST RISE TIME QUENCHING SPARK GAP

William E. Austin, Wayne, Pa., assignor to General Electric Company, New York, N.Y.

Filed May 17, 1973, Ser. No. 361,196

Int. Cl. H01j *1/46*

U.S. Cl. 313—195 **2 Claims**



1. A fast-rise-time quenched spark gap comprising:

a. a pair of fixed electrodes insulated from and opposed to each other to form a gap between them, and adapted to be connected to a source of potential;

b. at least one foraminate electrode or baffle having its foraminate portion in the gap between the fixed electrodes, spaced uniformly apart from and insulated from all other electrodes,

c. in an atmosphere of gas at a pressure at least approximately 1 atmosphere.

3,846,658
POST ACCELERATION TYPE CATHODE RAY TUBE WITH PERFORATED HOLLOW COLLECTOR ELECTRODE ADJACENT SHADOW MASK

Masayoshi Kasai, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1972, Ser. No. 311,679

Claims priority, application Japan, Nov. 30, 1971, 46-11811[U]

Int. Cl. H01j *29/06, 31/20*

U.S. Cl. 313—408 **3 Claims**

1. In a post acceleration type cathode ray tube of the class comprising a panel, a fluorescent screen coated on the inner surface of said panel, a funnel, an auxiliary electrode coated on the inner surface of said funnel, a neck, at least one electron gun positioned within said neck, said panel, funnel and neck cooperating to form a sealed envelope, an electrode having perforations for transmitting an electron beam maintained at a potential below the post acceleration potential and positioned in front of said fluorescent screen, and a hollow secondary electron collector electrode positioned within the envelope and having open ends, said collector electrode forming an enclosure surrounding the path of the electron beam directed toward the fluorescent screen from the electron gun, the improvement in which said secondary electron collector electrode is constructed to have perforations for transmitting a portion of the secondary electrons generated by other electrodes of said tube to said auxiliary electrode.

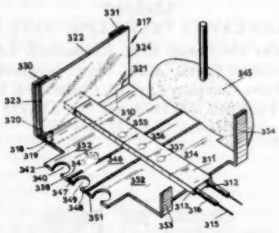
3,846,659
MOUNTING ARRANGEMENT FOR COPLANAR GRIDS HAVING COMMON FLAT STRIP CATHODE

Georges Casset, Issi-Les-Moulineaux; Jean-Pierre Driffort, Chate-Nay-Malabry, and Pierre Lebel, Kremlin-Bicetre, all of France, assignors to Ste dite France-Couleur, Paris, France

Division of Ser. No. 857,638, Sept. 10, 1969, Pat. No. 3,733,507. This application Sept. 27, 1972, Ser. No. 292,639

Int. Cl. H01j *29/02, 29/46*

U.S. Cl. 213—411 **2 Claims**



1. In a color-television picture tube including a screen with luminescent triads of primary colors and a plurality of electron guns with coplanar parallel axes trained upon said screen, the improvement wherein said electron guns comprise a flat strip with an electron-emissive surface forming a common cathode, mounting means for said strip, a plurality of metal plates adjoining each other with boundaries transverse to said strip in a plane parallel to said electron-emissive surface, said plates being provided with respective perforations confronting said electron-emissive surface, and retaining means securing said plates to one another and to said mounting means with said perforations in mutual alignment; said plates including two outer plates and one intermediate plate, said mounting means comprising a pair of end supports for said strips interlockingly engaging said outer plates, said retaining means comprising a fusible body sealingly anchored to extremities of all said plates; said extremities having edges imbedded in said body, said edges forming recesses flanked by converging jaws.

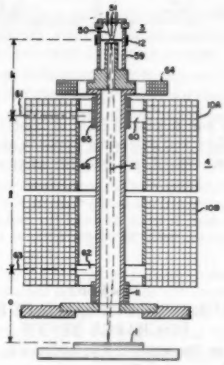
3,846,660
ELECTRON BEAM GENERATING SYSTEM WITH COLLIMATED FOCUSING MEANS

John E. Wolfe, Camillus; George E. Ledges, Liverpool, and Homer H. Glascock, Scotia, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Aug. 6, 1969, Ser. No. 847,972

Int. Cl. H01j *29/64, 29/56*

U.S. Cl. 313—421 **6 Claims**



1. An electron beam structure for forming a high resolution, high current density electron beam, comprising:

a. an evacuated chamber,

b. cathode means within said chamber including a rigidly supported cathode needle structure, the tip of which provides an extremely small dimensioned emissive surface,

c. field means within said chamber for providing a generally radial electric field centered about the cathode needle emissive tip with a sufficiently high electric field gradient in the vicinity of the emissive tip for field emission, said cathode means and said field means producing a high density emission current formed into a beam having a divergent configuration,

d. a first focus lens for transposing the divergent configuration of said beam into a collimated configuration, and

e. a second focus lens for transposing the collimated configuration of said beam into a convergent configuration, producing at an image plane an extremely small spot at high current density.

3,846,661
TECHNIQUE FOR FABRICATING INTEGRATED INCANDESCENT DISPLAYS

Alan V. Brown, and Frederick Hochberg, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 138,409, April 29, 1971, Pat. No. 3,715,785. This application Oct. 5, 1972, Ser. No. 296,366

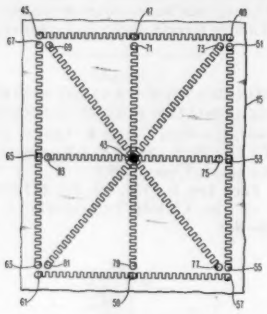
Int. Cl. H01j *7/42*

U.S. Cl. 313—491 **10 Claims**

1. An incandescent filament arrangement comprising:

an insulative substrate base member having a lower surface

and an upper surface and having a plurality of conductive support posts extending at least from said lower surface through said substrate base member to at least said upper surface, and a body of incandescent material characterized by being substantially planar in a plane substantially



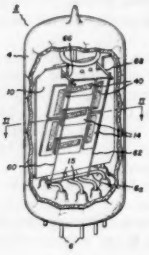
parallel to and displaced from at least a portion of said upper surface and extending between and being integral with at least two of said plurality of conductive support posts.

3,846,662

ALPHA-NUMBERIC DISPLAY TYPE ELECTRON DISCHARGE DEVICE

John M. Hooker, Owensboro, Ky., assignor to General Electric Company, Owensboro, Ky.

Filed June 22, 1970, Ser. No. 48,155
Int. Cl. H01j *61/66*
U.S. Cl. 313—496 **4 Claims**



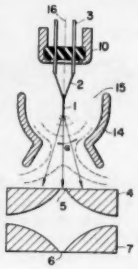
1. An alpha-numeric display type electron discharge device comprising: an evacuated envelope containing a cathode, an insulating anode support substrate, and a plurality of planar anode segments mounted on said substrate generally in one plane, each of said anode segments having a coating of fluorescent material on at least a portion of a first surface of said segment and having means on the opposite surface of said segment to space the segments from said substrate an amount that is small with respect to the lateral dimensions of said segments, said spacing means being spaced from the edges of said opposite surface.

3,846,663

ELECTRON GUN DEVICE HAVING A FIELD EMISSION CATHODE TIP PROTECTED FROM DESTRUCTION DUE TO ION IMPINGEMENT

Tsutomu Komoda, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 20, 1971, Ser. No. 182,041
Claims priority, application Japan, Sept. 18, 1970, 45-81283
Int. Cl. H01j *29/02, 29/52*
U.S. Cl. 315—3 **2 Claims**



1. In an electron gun device of the field emission type having a cathode tip of needle shape, means for heating said cathode tip to clean it, means for drawing electrons from said cathode tip including an anode opposing said cathode tip and having a hole therein which is of smaller area than the area of the remainder of said anode through which at least part of the electrons from said cathode pass and means for applying a positive electric voltage to said anode with respect to said cathode tip so as to produce an electric field therebetween sufficient to cause electrons to be emitted from said cathode tip toward said anode, the improvement which comprises

suppression electrode means disposed between said cathode tip and said anode for preventing passage therethrough of ions emitted from said anode by means of electron impingement therein, said suppression electrode means including an electrode having an elongated annular configuration symmetrical about a central axis with a middle portion thereof being closer to said central axis than the two end portions thereof, and

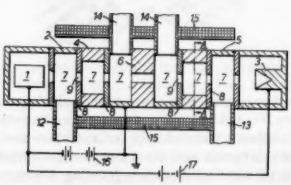
means for applying to said suppression electrode means a positive voltage higher than that applied to said anode, whereby said cathode tip can be protected from destruction due to ion impingement thereon.

3,846,664

COUPLED CAVITY TRAVELLING WAVE TUBES

Robin Charles Moorhouse King, Chelmsford, England, and Neville Wreford Harris, Acton, Mass., assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Feb. 22, 1973, Ser. No. 334,939
Int. Cl. H01j *5/34*
U.S. Cl. 315—3.6 **10 Claims**



1. A travelling wave tube including an electron gun for producing an electron beam; a collector electrode for collect-

ing said electron beam; a coupled cavity slow wave structure between said gun and collector for coupling radio frequency energy into and out of said electron beam and having a pass band defining a predetermined center frequency; a radio frequency signal input adjacent said electron gun and coupled to said slow wave structure to feed thereto radio frequency signals to be coupled to the beam; and a radio frequency signal output adjacent said collector electrode and coupled to the slow wave structure for extracting amplified radio frequency signals therefrom; and in which tube adjacent cavities of the slow wave structure are coupled one to the other by resonant coupling elements, the resonant frequencies of which elements are different from said center frequency and the resonant frequencies of some of which elements at the output end of the structure change successively to approach said center frequency toward the radio frequency output end of the tube.

3,846,665

VELOCITY MODULATION TUBE WITH FREQUENCY MULTIPLICATION FOR THE CONTINUOUS GENERATION OF HIGH POWER OUTPUTS

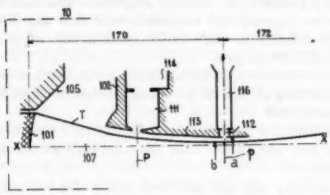
Gerard Firmain, and Georges Faillon, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed June 22, 1973, Ser. No. 372,757

Claims priority, application France, June 27, 1972, 72.23173

Int. Cl. H01j *25/10*

U.S. Cl. 315—5.43 **4 Claims**



1. A high power velocity modulation tube, operating by frequency multiplication, for the production of a high frequency radio wave at a frequency nf_1 from a high frequency radio wave of frequency f_1, n being an integer greater than unity, said tube comprising:

an electron-gun and associated means for producing an electron beam and accelerating it towards a collector,

means provided to make the beam converge at its output from the cathode of the electron gun towards a minimum cross-section,

at least two electromagnetic high-frequency resonators, arranged in the path of the beam, through which the beam passes, separated by a space along which the electrons of the beam propagate with constant velocity, one of said resonators known as the first resonator, resonating at the frequency f_1 and velocity modulating the electrons of the beam, being located close to the cathode of said electron gun while one of the other of said resonators known as the second resonator, is arranged adjacent the said miminum cross-section of the beam, the aperture of said second resonator through which the beam passes being of dimensions which are small enough to provide coupling of said second resonator with the beam in the absence of grids in said resonator in the path of the beam, said second resonator which resonates at the frequency nf_1, picking up the high frequency wave generated at frequency nf_1 and directing it towards a load coupled to said resonator.

3,846,666

HIGH VOLTAGE CIRCUIT OF COLOR TELEVISION RECEIVER

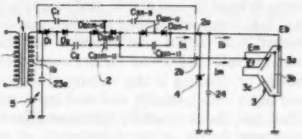
Nobuyuki Suzuki; Toyotaro Nishihara, both of Yokohama, and Gentaro Miyazaki, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 5, 1973, Ser. No. 329,867

Claims priority, application Japan, Feb. 4, 1972, 47-12222

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **17 Claims**



1. A high voltage circuit for a color television receiver, comprising:

a. fly-back transformer means including a primary winding and a secondary winding for producing high voltage pulses from horizontal deflection outputs,

2. multiple stage voltage rectifier means made up of double voltage rectifier circuits formed into n stages for producing high DC voltages from the output of said transformer means,

3. A Braun tube including a shadow mask, a phosphor screen and a funnel electrode portion,

4. means to apply the output of the n-th stage of said voltage rectifier means to said phosphor screen, and means to apply the output of the m-th stage to said shadow mask, where n and m are integers, n being greater than m and greater than 1, and

5. means including a voltage stabilizing element connected between an output terminal of an l-th stage, where ($1 < l \leq n$), of said voltage rectifier means and ground to stabilize the current flowing from said voltage rectifier means through said element to ground, thereby to maintain constant the voltage ratio between the phosphor screen voltage and the shadow mask voltage.

3,846,667

MAGNETRON HAVING EXTERNAL CHOKE STRUCTURE

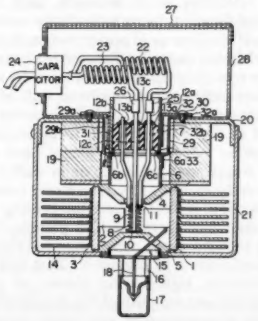
Hiroshi Hisada, and Akikazu Harada, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 25, 1973, Ser. No. 372,903

Claims priority, application Japan, June 30, 1972, 47-76597

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.53 **3 Claims**



1. A magnetron comprising an air-tight vacuum envelope, a cylindrical anode including a plurality of vanes, a cathode

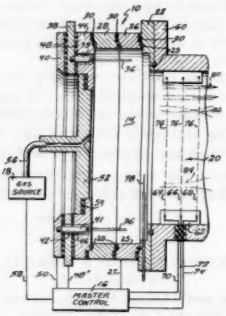
arranged on the central axis of said anode for thermionic emission, an input side insulator, a plurality of magnets for applying a magnetic field to the working space between said anode and cathode, a plurality of supports for supporting said cathode through said input side insulator, means for supplying working current through said supports to said cathode, an input side sealing metal member interposed between said anode and said input side insulator, said input side sealing metal member being hermetically closely attached to said input side insulator, an output side sealing member, an output side insulator, and an output terminal; said air-tight vacuum envelope being defined by said anode, said magnets, said input side insulator, said input side sealing member, said output side sealing member, said output side insulator and said output terminal, wherein said magnetron further comprises a choke structure having an opening in the vicinity of the connection between said input side insulator and said input side sealing metal member, said choke structure having an effective length approximately one fourth of the wavelength of microwave energy oscillated by said magnetron and being arranged on the outside of said air-tight vacuum envelope.

3,846,668

PLASMA GENERATING DEVICE

Kenneth W. Ehlers, Alamo, and Wulf B. Kunkel, Berkeley, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 22, 1973, Ser. No. 334,824
Int. Cl. H01j 7/24; H05h 1/00
U.S. Cl. 315—111 **6 Claims**



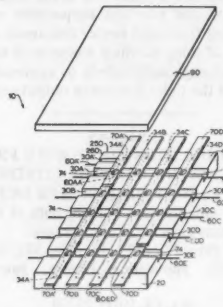
1. A high current plasma generating device comprising a vessel means having an evacuated electron arc discharge chamber therein, an electron emitter means being made up of a plurality of refractory metal filaments, each one of said plurality of metal filaments being individually mounted at one end of said vessel means so as to project longitudinally into the arc discharge chamber and to be disposed in circumferentially spaced relation to each other as well as inwardly spaced relation to the surrounding outer peripheral wall of said vessel means, reservoir means for selectively introducing a predetermined amount of a gaseous medium to be ionized into the discharge chamber of said vessel means, and an annular shaped anode means provided in the outer wall of said vessel means in outwardly spaced and circumjacent relation to said plurality of electron emitter means for causing a series of electron arc discharges between said plurality of electron emitter means and said anode means so as to effect formation of the introduced amount of gaseous medium into a relatively stable and quiescent high current plasma of substantially uniform ion current density throughout its extent upon simultaneous electric energization of said anode means and said plurality of emitter means when said reservoir means admits a predetermined amount of gaseous medium into the discharge chamber.

3,846,669

DISPLAY PANEL WITH RASTER SCANNING MEANS

David Glaser, Green Brook, and George A. Kupsky, Milford, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 223,039, March 2, 1972, abandoned, which is a continuation of Ser. No. 38,408, Aug. 18, 1970,.
This application Feb. 16, 1973, Ser. No. 333,424
Int. Cl. H01j 17/04
U.S. Cl. 315—169 R **13 Claims**



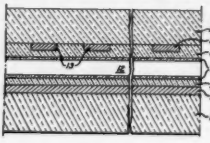
1. A display panel comprising
an insulating plate including a plurality of anode electrodes and a plurality of cathode electrodes oriented with the anodes crossing the cathodes, with first gas-filled glow cells defined by each crossing of a pair of anode and cathode electrodes,
gas communication channels formed in said plate and interconnecting all of said glow cells in a series which defines a raster, and
an auxiliary cell for facilitating the start of a scanning operation and associated with the first cell in the scanning series,
said auxiliary cell and said first cell in the scanning series comprising a single enlarged cell.

3,846,670

MULTIPLE GASEOUS DISCHARGE DISPLAY-MEMORY PANEL HAVING DECREASED OPERATING VOLTAGES

Robert F. Schaufele, Okemos, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 27, 1970, Ser. No. 67,604
Int. Cl. H05b 37/00
U.S. Cl. 315—169 TV **6 Claims**

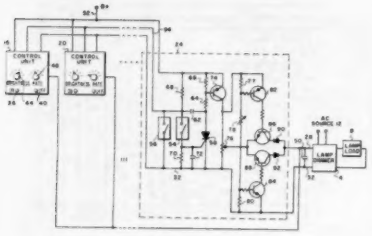


1. As an article of manufacture, a dielectric material body for a gaseous discharge display/memory device, said dielectric body containing a surface deposit of at least one electron emissive substance having a thickness of at least about 100 angstrom units to provide substantially decreased gaseous discharge operating voltages without substantially affecting the memory margin of said device, said electron emissive substance being selected from Group IA elements, Group IA oxides, barium, GaAs, GaP, InAs, InSb, InP, NiO, CsF, CsI, AgOCs, and AuOCs.

3,846,671
LIGHT DIMMING SYSTEM FOR CONTROLLING BRIGHTNESS AND RATE OF CHANGE OF BRIGHTNESS OF LIGHTS

James C. Johnson, Arlington, Tex., assignor to Hunt Electronics Company, Dallas, Tex.

Filed Mar. 26, 1973, Ser. No. 344,492
Int. Cl. H05b *37/02, 41/39*
U.S. Cl. 315—291 **8 Claims**



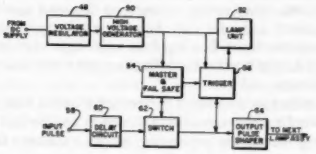
1. A light dimming system including:
a dimmer circuit responsive to a voltage signal for controlling the flow of current through a lamp load; and
at least one control unit coupled to said dimmer circuit, said control unit comprising:
a potentiometer having a tap, the voltage at which determines the level of said voltage signal;
a capacitor coupled to said dimmer circuit for storing an electrical charge to thereby develop thereacross a voltage substantially equal to said voltage level;
a first conducting means including a first transistor having an emitter and a collector connected in series between the tap of said potentiometer and said capacitor for conducting current from said tap to said capacitor when the voltage at the tap exceeds the voltage across said capacitor;
a second conducting means including a second transistor having an emitter and a collector connected in series between said tap of said potentiometer and said capacitor for conducting current from said capacitor to said tap when the voltage across said capacitor exceeds the voltage at said tap;
a variable impedance means; and
means coupling said variable impedance means to the bases of said first and second transistors and responsive to the impedance of said variable impedance means for controlling the current flow through said first and second conducting means to control the rate of current flow between said tap and said capacitor.

3,846,672
STROBE LIGHT SYSTEM FOR TRANSITIONAL GUIDANCE AND DELINEATION

Frederic C. Doughty, Tredyffrin Township Chester County, Pa., assignor to Elco Corporation, Willow Grove, Pa.

Filed Apr. 2, 1973, Ser. No. 347,257
Int. Cl. H05b *37/02, 41/44*
U.S. Cl. 315—312 **7 Claims**

1. A strobe light system for deployment along a roadway to provide vehicular transitional guidance comprising:
a plurality of light assemblies, each of said light assemblies including;
a portable support stand,
a strobe lamp unit mounted on said support stand,
a circuit housing mounted on said support stand,
a jumper cable connected at one end to said assembly, and circuit means mounted in said circuit housing for controlling the flashing of said strobe lamp unit said circuit means including trigger means for causing said strobe lamp unit to flash,
input means for receiving an external pulse from the circuit means of a preceding light assembly,
output means connected to said trigger means for supplying an external pulse to the circuit means of the succeeding light assembly whenever said trigger means receives an actuating pulse,
switching means for selectively connecting said input means to said trigger means, so that said external pulse actuates said trigger means, and
pulse generator means connected to said trigger means for providing an actuating pulse to said trigger means,

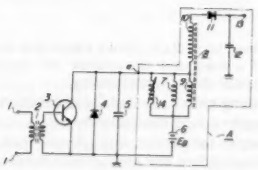


said switching means including means for controlling said pulse generator means to operate as a master trigger actuating pulse generator when said switching means causes said input means to be disconnected from said trigger means, and fail safe means for controlling said pulse generator means to operate as a fail safe trigger actuating pulse generator when said switching means causes said input means to be connected to said trigger means; and
a primary cable which supplies operating voltage to and interconnects said circuit means of said light assemblies through the individual jumper cable associated with each of said light assemblies.

3,846,673
HIGH VOLTAGE REGULATION CIRCUIT FOR A COLOR TELEVISION RECEIVER

Ryoichi Hirota; Tooru Fujishima, both of Yokohama; Gentaro Miyazaki, Fujisawa; Tadahiko Iwasaki, Kamakura; Mitsuharu Akatsu, and Tomoo Kinoshita, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 809,244, March 21, 1969, Pat. No. 3,609,447. This application July 7, 1971, Ser. No. 160,481The portion of the term of this patent subsequent to Sept. 28, 1988, has been disclaimed.
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **3 Claims**



1. In a horizontal deflection and high voltage system for television including a D.C. power source for supplying a D.C. voltage to the system, a high voltage terminal for connection to a picture tube, a horizontal deflection yoke energizable to produce line deflection of an electron beam, switching means connected to said horizontal deflection yoke for supplying an energizing voltage to said horizontal deflection yoke to produce line trace movements of the electron beam and for cutting off such energizing voltage to produce retrace movements

of the electron beam in response to input horizontal deflection synchronizing signals, transformer means connected to said horizontal deflection yoke for producing a high voltage flyback pulse, and rectifying means connected to said high voltage terminal for rectifying the flyback pulse to produce high voltage power for electron beam acceleration,

a high voltage regulation circuit comprising:

variable inductance means comprising a saturable core, a high voltage regulation coil wound around at least one portion of said saturable core, said high voltage regulation coil, said horizontal deflection yoke and said transformer means being connected together in parallel;

a control winding wound around a different portion of said saturable core, one end of the control winding being connected to said switching means;

D.C. blocking means connected between said D.C. power source and said switching means for preventing a D.C. current from flowing into said high voltage regulation coil, said horizontal deflection yoke and said transformer means; and

an inductance element connected in series with said control winding between said D.C. power source and said switching means for preventing an A.C. current from flowing into the control winding;

whereby the inductance of said high voltage regulation coil is controlled so as to decrease or increase in inductance in response to an increase or a decrease, respectively, in the D.C. current flowing from said D.C. power source into said control winding.

3,846,674

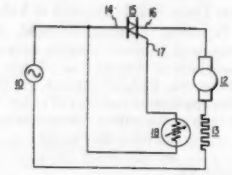
OVERCURRENT PROTECTION CIRCUIT INCLUDING A HEAT SENSITIVE ELEMENT AND A THYRISTOR

Thomas Charles McNulty, Middlesex, N.J., assignor to R.C.A. Corporation, New York, N.Y.

Continuation of Ser. No. 841,746, July 15, 1969, abandoned. This application Aug. 23, 1972, Ser. No. 174,230

Int. Cl. H02h *7/08*

U.S. Cl. 317—13 C **4 Claims**



1. An overload protection circuit adapted to sense overload conditions of a load and discontinue the supply of power thereto as a result thereof, comprising:

heat dissipating means adapted for connection to said load, the amount of heat dissipated by said means being proportionate to the current through said load;

a thyristor having first and second main terminal electrodes and a control electrode, said main terminal electrodes adapted for connection in series circuit with said load;

a time constant circuit comprising the serial combination of a resistor and a capacitor, said serial combination being connected across said first and second main terminal electrodes;

means for connecting the point between said resistor and said capacitor to said control electrode; and

a negative temperature coefficient thermistor connected in parallel circuit with said capacitor, said thermistor disposed in physical proximity with said heat dissipating means.

3,846,675

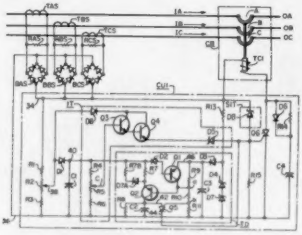
MOLDED CASE CIRCUIT BREAKERS UTILIZING SATURATING CURRENT TRANSFORMERS

Alan B. Shimp, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1973, Ser. No. 327,963

Int. Cl. H02h *3/08*

U.S. Cl. 317—33 R **10 Claims**



1. An electrical protective system for use with an electrical power system including at least one conductor, comprising:

a saturating current transformer means having output terminals and having a predetermined number of secondary turns for monitoring alternating electrical current in said conductor to thereby provide a combination power-intelligence signal at said output terminals, a core resistor means connected across said secondary turns of said saturating current transformer means, said saturating current transformer means being non-saturated within thirty electrical degrees of said alternating current zero so that said power-intelligence signal has a non-saturated position;

an electrical control circuit having a set of input terminals for being electrically connected in circuit relationship with said output terminals of said saturating current transformer means, said electrical control circuit having output terminal said electrical control circuit having means therein for anticipating the maximum absolute value of said alternating current during any half cycle thereof when energized by said non-saturated portion of said power-intelligence signal to provide an actuating signal at said output terminal of said electrical control circuit for useful purposes; and

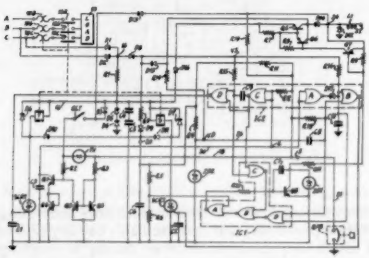
electrical protective means including coil means of predetermined resistance value, said protective means having input terminals which are connected in circuit relationship with said output terminals of said electrical control circuit, said coil means being connected in circuit relationship with said output terminal of said saturating current transformer means, said electrical protective means responding to the presence of said actuating signal from said electrical control circuit to enable said protective means to thereafter be energized by power from said output terminals of said saturating current transformer means being supplied to said coil means to thereby cause a change in the magnitude of said alternating electrical current in said electrical conductor when said alternating electrical current reaches a predetermined value, said predetermined resistance value of said coil means being low compared to said resistance value of said core resistor means and said predetermined number of said secondary turns of said current transformer means being sufficient in magnitude to provide sufficient electrical power to energize said coil means from said current transformer means at a predetermined value within a range of 120 percent of overload or larger for said alternating current in said conductor, said predetermined number of said secondary turns being of such a value as to by necessity cause saturation in said current transformer means within said thirty degrees of current zero.

3,846,676

ELECTRONIC CONTROL SYSTEM FOR REMOTE CONTROL CIRCUIT BREAKERS

Lawrence J. Ryczek, East Troy; Walter L. Rutchik, Wauwatosa, and Donald L. Van Zeeland, Franklin, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Sept. 13, 1973, Ser. No. 396,733
Int. Cl. H02h 3/08
U.S. Cl. 317—33 SC 6 Claims



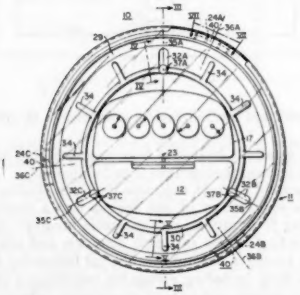
1. In an electronic control for a remote control circuit breaker system in which a main circuit breaker is normally operated by energization of electromagnetic set and trip coils in response to the opening of a pilot control circuit breaker and in which overload trip-open of the main circuit breaker results in closure of overload trip contacts to initiate flow of a controlled current through the pilot control circuit breaker to cause the latter to open, the improvement comprising means responsive to the manual closing and opening of said pilot control circuit breaker to initiate corresponding energization of one or the other of said set and trip coils and thereafter deenergize the same after electrically timed intervals.

3,846,677

PLASTIC WATTHOUR METER COVER HAVING AN INDEXED AND PROTECTED FRONT FACE

Joseph M. Keever; Gerald W. Finnen, and James E. Ramsey, Jr., all of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 260,638, June 7, 1972, abandoned. This application July 9, 1973, Ser. No. 377,847
Int. Cl. H02b 9/00
U.S. Cl. 317—107 3 Claims



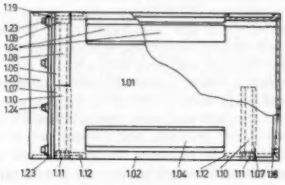
1. A watthour meter enclosure comprising the combination of a molded plastic cup-shaped cover extending along a center longitudinal axis and a vertically mountable base assembly having a center vertical axis; said base assembly detachably carrying said cover on three equally circumferentially spaced arcuate lugs having a predetermined orientation relative to said vertical axis; said cover including a forward closed end, a side surface extending rearwardly with a circular cross section from said closed end to a rear open end, a radial mounting flange extending around the open end, said flange including three circumferentially spaced locking tabs positioned along three equidistant radial axes extending from said longitudinal axis at said open end in rotational engagement with said arcuate lugs, a transparent circular front face area having an outer circumference in said closed end for viewing the dial plate of a meter movement mountable on said base assembly; three forward end projections extending from said closed end forward of any other front most part of said closed end, said three forward end projections being radially positioned outside said front face area at the outer circumference of said front face area to terminate said closed end beyond said front face area, and said three forward end projections being positioned equally circumferentially spaced relationship along three equidistant radial axes extending from said longitudinal axis at said closed end with the last named axes being displaced about said longitudinal axis at equal predetermined arcuate distances from said radial axes at said open end such that each of the end projections is arcuately displaced at a predetermined arcuate distance relative to a separate one of the locking tab positions so that one of said end projections is positioned along a vertical axis longitudinally coinciding with the center vertical axis of said base assembly said cover is attached by said locking tabs in the final rotated mounting position on said arcuate lugs of said base assembly.

3,846,678

MULTI-CELLED MOUNTING FRAME FOR STATIC CONVERTER MODULES

Erwin Klein, Heddesheim, Germany, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 14, 1971, Ser. No. 207,842
Claims priority, application Germany, Dec. 19, 1970, 2062666
Int. Cl. H05k 7/18
U.S. Cl. 317—120 8 Claims

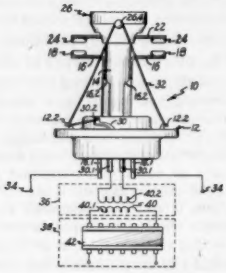


1. A mounting frame for a static converter system comprising an assembly of stacked and interconnected cells each of which receives a converter module of the plug-in type, each said cell having a rectangular configuration and including parallel spaced side walls, top and bottom walls and a rear wall, said side walls including parallel spaced externally located ribs provided with through-bores and which extend for a maximum of one-half the height of the side walls, the ribs on one side wall extending from the top down and the ribs on the opposite side wall extending from the bottom up, laterally adjacent cells being located in side-by-side relation with the lower ribs of one cell in alignment with the upper ribs of the adjacent cell, fastening bolts extending through the aligned bores of laterally adjacent cells for securing said cells in the side-by-side relationship, and connection terminal means carried by the rear wall of each cell and which are engaged with the plug-in terminals on the converter modules.

3,846,679
HIGH GAIN RELAYS AND SYSTEMS

Ernest M. Jost, Plainville; Lyle E. McBride, Jr., Norton, and Teuvo J. Santala, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 351,683, April 16, 1973. This application Jan. 7, 1974, Ser. No. 431,461
Int. Cl. H05b *1/02;* **H01h** *37/50, 47/26*
U.S. Cl. 317—132 **5 Claims**



1. A control circuit system comprising a relay operable at low power levels having an insulating base, stationary contact means mounted on said base, movable contact means mounted on said base for movement between a closed circuit position engaging said stationary contact means and an open circuit position spaced from said stationary contact means, spring means mounted on said base biasing said movable contact means from one of said positions to the other of said positions, and a metal wire secured between said movable contact means and said base, said wire being of a selected metal alloy to be deformed from an original length to a second length by said spring bias as said movable contact means is moved from said one position to said other position by said spring bias while said alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original length and to display a relatively higher modulus of elasticity to move said movable contact means back to said one position against said spring bias when said wire is heated to said transition temperature, said wire having a selected cross-sectional size and length to be heated from room temperature to said transition temperature by passing electrical current through said wire with a power input of less than about 2 watts; a power source directing energizing current through said relay wire; a device to be energized from said power source through said relay contact means when said relay is in closed circuit position; and resistor means displaying varying resistance in response to temperature changes arranged to regulate said energizing current in said relay wire for operating said relay to energize said device at one temperature level and to deenergize said device at another temperature level.

3,846,680
AUTOMATIC-CONTROL ELECTRONIC APPARATUS FOR MACHINE TOOLS INCLUDING PROVISION FOR ZERO OFFSET

Carlo Guerci, Ivrea, and Amerigo Vigiliermo, Baio Dora, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Nov. 5, 1971, Ser. No. 195,912
Claims priority, application Italy, Nov. 7, 1970, 70707/70
Int. Cl. G05b *19/36*
U.S. Cl. 318—685 **11 Claims**

1. Apparatus for automatic control of machine tools comprising:

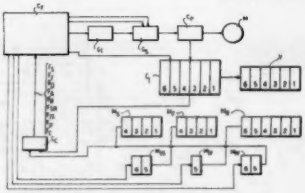
a stationary member,

a movable member transversely movable toward and away from said stationary member,

stepping motor means for supplying the motive power to said movable member,

means for generating electrical pulses, the output of which is coupled to said stepping motor and

frequency generator means for providing said pulses with predetermined frequencies, said frequency generator

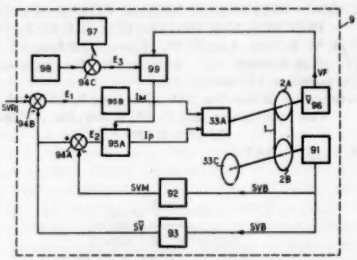


means having first and second oscillators generating different frequencies, said first oscillator causing said motor to move said movable member during a roughing-out operation, said second oscillator causing said stepping motor to move said member during a finishing operation with a speed slower than the speed of the roughing-out operation.

3,846,681
VELOCITY MODULATOR DEVICE

Roger Pierre Arhan, Belfort, and Andre Roger Camille Lacroix, Cravanche, both of France, assignors to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 23, 1973, Ser. No. 344,312
Int. Cl. H02p *5/00*
U.S. Cl. 318—115 **22 Claims**



1. An intermittent motion system comprising, in combination:

a rotatable assembly having at least one rotatable member to which intermittent motion is to be applied;

a drive assembly for said rotatable device including a d.c. motor having a rotor of low inertia and a torsion bar connecting said rotor to said rotatable member, the system consisting of said rotatable assembly and said drive assembly having a natural mechanical frequency F, said drive assembly including means for imparting a uniform rotational motion component of constant velocity V to said rotatable member and means for energizing said d.c. motor at said frequency F to impart an oscillatory motion component to said rotatable member having a velocity function equal to $V_M \sin wt$ where V_M is the maximum velocity of said oscillatory component and $W = 2\pi F$; and control means for controlling energization of said drive assembly to assure V_M is substantially equal to V.

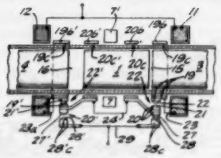
3,846,682
SEALED PUMP AND DRIVE CIRCUITS THEREFOR

Philip E. Massie, 4220 Irving Pl., Culver City, Calif. 90230

Division of Ser. No. 113,321, Feb. 8, 1971. This application Nov. 20, 1972, Ser. No. 308,044

Int. Cl. H02r 5/40

U.S. Cl. 318—138 10 Claims



1. A reciprocating electrical machine comprising: a magnetically actuatable reciprocatable armature and means supporting it for movement; permanent magnet means associated with the armature and supporting means; electrical winding means disposed to produce an electromagnetic field for reciprocating the armature in association with the field of the permanent magnet; and switch means for energizing the windings in a manner to cause the armature to reciprocate, said switch means comprising magnetic reed switch means positioned in proximity to the electromagnetic field generated by the windings so as to be actuable thereby in a manner to cause the armature to reciprocate.

3,846,683
STARTING DEVICE FOR A SINGLE-PHASE ASYNCHRONOUS MOTOR

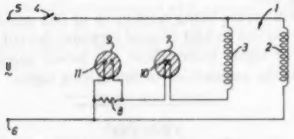
Gorm Laursen, Ahornsvej 6, 6400 Sonderborg, Denmark

Filed Sept. 4, 1973, Ser. No. 394,391

Claims priority, application Germany, Oct. 4, 1972, 2244680

Int. Cl. H02p 1/44

U.S. Cl. 318—221 H 1 Claim



1. A starting device for a single phase asynchronous motor comprising an auxiliary winding, first and second glow discharge lamps each having a thermal switch, said lamps being in series with said winding, said first lamp having a glow discharge current established by current flowing in said auxiliary winding, said first lamp switch having normally closed contacts and said second lamp switch having normally open contacts, a resistor in shunt with said second lamp for causing ignition of said second lamp when crossed by a predetermined supply voltage, said second lamp switch being closeable after a time lag due to a glow discharge current of said second lamp, said first lamp switch being openable after a time lag when a maximum line current is established when said second line switch is closed, said resistor causing extinguishing of said second lamp when a minimum voltage drop thereacross is established by a minimum line current consisting only of said first lamp discharge current.

3,846,684
FEEDING DEVICE FOR DIRECT CURRENT MOTOR

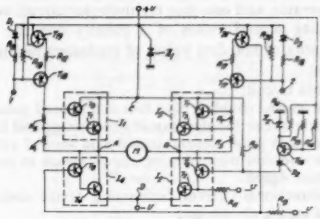
Alain Francois Jossic, Belfort, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed Apr. 2, 1973, Ser. No. 347,286

Claims priority, application France, Apr. 10, 1972, 72.12431

Int. Cl. H02p 5/16

U.S. Cl. 318—257 10 Claims



1. A feeding device for a motor with D. C. current, comprising, on the one hand, at least two control arrangements for the passage of an electric current installed on either side of said motor to form a link of the circuit connected with the terminals of a D. C. power source, said arrangements each including at least one power transistor and, on the other hand, an actuating device, as such controlled by a control signal, to simultaneously render said arrangements conductive or blocking, said actuating device comprises two transitors of which, the first, receiving the control signal at its base, controls by its emitter-collector path, on the one hand, one of said arrangements apt to be rendered partially conductive by controlling the conduction of its power transistors as a function of said control signal, and on the other hand, the base of the second transistor which is saturated and whose emitter-collector path controls the second arrangement capable of becoming totally conductive by saturating its power transistors, irrespective of the amplitude of the control signal.

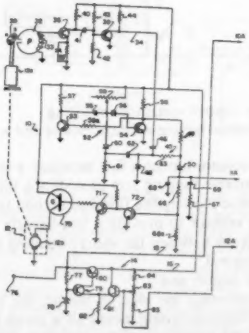
3,846,685
TAPE PLAYER CARTRIDGE CONTROL CIRCUIT

William B. Huber, 233 Juniper, Park Forest, Ill. 60466

Division of Ser. No. 80,263, Oct. 13, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,150

Int. Cl. H02p 5/16

U.S. Cl. 318—327 4 Claims



1. In a motor control circuit, the combination including: a motor having an output shaft and winding means for

receiving energizing current to cause rotation of said output shaft;

pulse generator means responsive to the speed of rotation of said output shaft to produce first pulses of one polarity having a time duration indicative of the speed of rotation with the time duration decreasing with increasing speed;

a current control device having load electrodes connected to said winding means to supply energizing current thereto, and further having a control electrode;

a one-shot multivibrator circuit means having an input terminal for receiving said first pulses from said pulse generator, said one-shot multivibrator circuit means producing second pulses of a polarity opposite said one polarity of said first pulses of predetermined time duration;

a matrix circuit;

circuit means coupling said first and second pulses to said matrix circuit for algebraically combining said first pulses from said pulse generator and said second pulses from said one-shot multivibrator circuit means to produce an output signal;

a unidirectional current conducting device connected to said matrix circuit; and

bias control means coupled between said unidirectional current conducting device and said control electrode of said current control device to control conduction thereof in response to the polarity of said output signal from said matrix circuit thereby controlling the speed of rotation of said output shaft.

3,846,686

SERVO CONTROL SYSTEMS

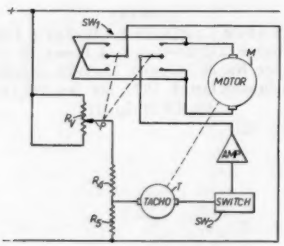
Brian R. Malyon, Feltham, England, assignor to Selectro-Micro Company Limited, London, England

Filed May 8, 1973, Ser. No. 358,463

Claims priority, application Great Britain, May 9, 1972, 21476/72

Int. Cl. H02p *5/06*

U.S. Cl. 318—349 **4 Claims**



1. A servo control system, comprising

a supply source having a first terminal and a second terminal,

a variable resistor having a first terminal, a second terminal and a variable tapping arm providing a third terminal,

means short-circuiting the first and second terminals of the variable resistor to provide a non-linearly variable resistance means between the short circuiting means and the third terminal,

an electric motor, and

means connecting the electric motor, the third terminal, and the short circuiting means all in series across the first and second terminals of the supply source so that the non-linearly variable resistance means is in series with the electric motor.

3,846,687

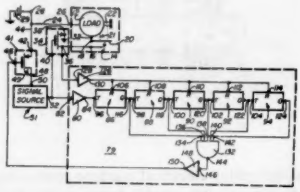
DIGITAL POWER CONTROL CIRCUIT FOR AN ELECTRIC WRIST WATCH

R. Gary Daniels, Tempe, and James Walter Foltz, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 169,246, Aug. 5, 1971. This application July 10, 1972, Ser. No. 270,130

Int. Cl. H02p *1/18*

U.S. Cl. 318—446 **14 Claims**



1. A control circuit adapted for selectively applying and removing electrical power flowing from a power supply to the power terminal of a signal source which when energized provides a plurality of driving signals at a constant frequency at its output terminal to drive a load that selectively provides first control signals at its output terminal, the control circuit removing the power from the power terminal of the signal source in response to the duration between successive ones of the first control signals exceeding a predetermined time, the control circuit including in combination:

counter means having an input terminal, an output terminal and a reset terminal;

first circuit means coupling said input terminal to the output terminal of the signal source;

second circuit means coupling said reset terminal to the output terminal of the load;

said counter means counting the driving signals and providing a second control signal at said output terminal thereof in response to the occurrence of a predetermined number of said driving signals which takes substantially the predetermined time, said counter means resetting its count in response to each of the first control signals;

switch means for connecting the power supply to the signal source and having a control terminal;

third circuit means connecting said control terminal of said switch means to said output terminal of said counter means; and

said switch means being responsive to said second control signal applied to said control terminal thereof to disconnect the signal source from the power supply thereby causing the termination of the driving signal.

3,846,688

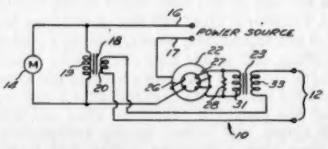
MACHINE WORK SENSOR

Ronald S. Perloff, Shaker Heights, Ohio, assignor to Electron Inc., Bratenahl, Ohio

Filed July 18, 1973, Ser. No. 380,406

Int. Cl. H02p *5/28*

U.S. Cl. 318—490 **10 Claims**



1. An electrical circuit for sensing the load on a motor comprising a plurality of lines for carrying electrical power

from a source to a motor, a step-down transformer having a primary coil shunted across two of said lines, said step-down transformer providing at its secondary coil a reduced voltage in phase with line voltage, one of said power lines forming a primary coil in a toroidal transformer, the toroidal transformer including a secondary coil providing a voltage in phase with line current, said toroidal transformer secondary coil driving the primary of a step-up transformer, the outputs of the step-down and step-up transformers being arranged to be substantially equal in magnitude and being connected in series to form a vectorial output signal variable between upper and lower amplitude limits in response to a change in the phase angle between motor voltage and motor current caused by a change in load on the motor.

3,846,689

METHOD AND DEVICE FOR THE CONTROL OF THE MACHINING ON A MACHINE TOOL FOR STOCK REMOVAL

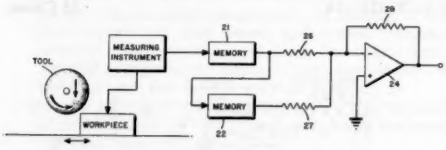
Mario Possati, Bologna, Italy, assignor to Finiki Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C, Bologne, Italy

Filed Apr. 5, 1973, Ser. No. 348,082

Claims priority, application Italy, Apr. 10, 1972, 3392/72; Jan. 18, 1973, 3304/73

Int. Cl. B23g *5/28*

U.S. Cl. 318—571 **11 Claims**



1. A method for controlling machining on a machine tool carrying out subsequent cuts for removing stock from a section of a workpiece, in which the stock of the section being machined is measured after the subsequent cuts and the machine is automatically controlled on the basis of said measurements, comprising the steps of:

storing signals representative of the stocks measured after the last and the preceding cut,

obtaining the difference signal of said signals,

comparing said difference signal with a signal representative of the stock still to be removed, and controlling the machine tool cycle by means of a signal resulting from said comparison.

3,846,690

DEVICE FOR CHARGING AN ELECTRIC POWER STORAGE ELEMENT TO A PREDETERMINED VOLTAGE

Roland Colyn, Le Perreux, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed July 11, 1973, Ser. No. 378,106

Claims priority, application France, July 11, 1972, 72.25037

Int. Cl. H03k *3/30*; **H02j** *7/00*

U.S. Cl. 320—1 **2 Claims**

1. A device for charging an electric power storage element to a predetermined voltage, said device comprising:

a continuous electric current source,

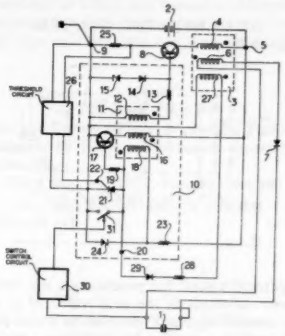
an induction coil comprising a primary winding, the ends of which are connected respectively to the terminals of said source to produce a charging current of this coil, and a secondary winding, the ends of which are connected respectively to the terminals of said storage element,

an interrupter in series with said primary winding,

control circuit means for controlling the opening and closing of said interrupter to produce by the opening of this interrupter the discharge into said electric power storage element of the charge of said coil,

a first rectifier connected in series with said secondary winding,

means sensitive to the charging voltage of said storage element to interrupt the charging of this storage element when this voltage reaches the predetermined value; said device further comprising:



first means sensitive to the charging current of said coil and operative to open said interrupter when the intensity of the charging current reaches a predetermined threshold value,

and second means sensitive to the discharging current of said coil in said storage element and operative to keep the interrupter open during the entire discharging operation, said control circuit means controlling said interrupter being operative to keep said interrupter closed when said first and second means are not operative.

3,846,691

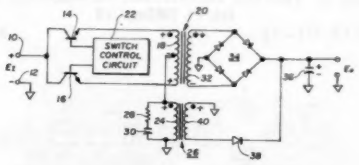
DIRECT CURRENT TO DIRECT CURRENT CHOPPER INVERTER

Edward Robert Higgins, North Linthicum, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 24, 1971, Ser. No. 118,356

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **5 Claims**



1. A chopper inverter comprising a pair of terminals adapted for connection to a source of direct current, a transformer having primary and secondary windings, at least one pair of switch devices for alternately connecting one terminal of said direct current source to opposite ends of the primary winding of said transformer, an output smoothing capacitor, means including a rectifier connecting the secondary winding of said transformer across said output smoothing capacitor, a flyback transformer having primary and secondary windings, means including the primary winding of said flyback transformer for connecting a center tap on the primary winding of

said first-mentioned transformer to said other input terminal, and unidirectional current means connecting the secondary winding of said flyback transformer to said output smoothing capacitor.

3,846,692

PEAK AMPLITUDE FOLLOWER CIRCUIT

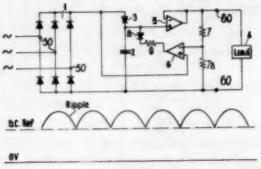
Anthony Hill, Wildwood, England, assignor to The General Electric Company Limited, London, England

Filed Nov. 14, 1973, Ser. No. 415,676

Claims priority, application Great Britain, Nov. 20, 1972, 53475/72

Int. Cl. H02m *7/02*; **G01r** *19/04*

U.S. Cl. 321—8 R **16 Claims**



1. An electrical circuit for producing a d.c. output signal which follows variations in the peak value of an alternating input signal comprising input terminals to which the alternating signal is applied, a rectifier for producing a rectified signal from the input signal, a storage capacitor which is connected to the rectifier output so as to be charged to a value corresponding to the peak value of the rectified signal, output terminals across which the d.c. output is produced, means for deriving a d.c. reference signal from the voltage across the capacitor, means for comparing the reference signal with the rectified signal to produce a control signal in response to variations, from a predetermined value, of the difference between the reference signal and the peak value of the rectified signal, due to falls in said peak value, and means controlled by said control signal for discharging the capacitor until said predetermined value of said difference is restored.

3,846,693

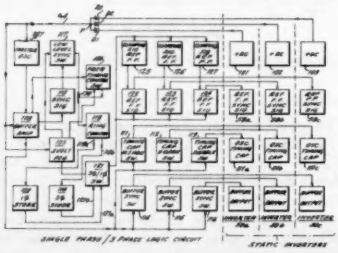
SELECTIVELY SWITCHED, MALFUNCTION-RESPONSIVE THREE PHASE AND PARALLEL LOGIC BOX FOR PLURAL STATIC INVERTERS

Albert William Compoly, Belmar, and Alfred Charles Temple, Manasquan, both of N.J., assignors to Avionic Instruments Inc., Rahway, N.J.

Filed Oct. 16, 1973, Ser. No. 406,912

Int. Cl. H02m *1/18*

U.S. Cl. 321—12 **8 Claims**



1. A logic control circuit for synchronizing a plurality of static inverters each comprising a local oscillator, a local bistable frequency divider coupled to the local oscillator and an output circuit coupled to the frequency divider for producing a regulated a.c. output at a regulated frequency, said logic control circuit comprising:

a master oscillator;

multiphase synchronizing means having an input for generating a plurality of phase synchronizing signals at each of its outputs which signals are at equidistant electrical phase intervals, said outputs each being coupled to a respective one of the local bistable frequency dividers of said static inverters for driving the local bistable frequency dividers;

sensing means coupled to said master oscillator for sensing the operating condition of said master oscillator to generate a disabling signal only when said master oscillator is operating properly, which disabling signal is coupled in common to each of the local oscillators of said static inverters to disable said local oscillators, said disabling signal being terminated upon the malfunctioning of the master oscillator to permit each static inverter to operate under control of its respective local oscillator.

3,846,694

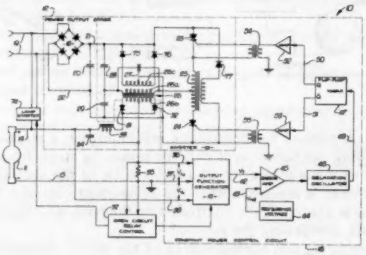
CONSTANT POWER SUPPLY EMPLOYING A VARIABLE FREQUENCY INVERTER

Albert E. Archer, Yorba Linda, Calif., assignor to John Fonseca, trustee, Alhambra, Calif.

Filed Mar. 30, 1973, Ser. No. 346,603

Int. Cl. H02m *7/52*

U.S. Cl. 321—18 **15 Claims**



1. A power supply having regulated power output, comprising:

a power output stage including a variable frequency, substantially constant pulse width inverter for supplying dc power to a load, and

constant power control circuit means for sensing deviation of the supply output power from a linear approximation of a constant power curve and for adjusting the frequency of said inverter to compensate for such sensed deviation, said control circuit and said output stage thereby cooperating to maintain the output power from said supply at a constant value.

3,846,695

SERIES-PARALLEL DUAL SWITCHING REGULATOR FOR USE WITH A VARIETY OF LINE VOLTAGES

Luther L. Genuit, Scottsdale, and John R. Nowell, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 7, 1973, Ser. No. 357,996

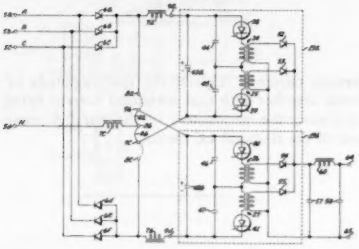
Int. Cl. H02m *7/04*

U.S. Cl. 321—27 R **3 Claims**

1. A series-parallel dual switching regulator for use with a polyphase power line having first, second, third and fourth output terminals, said regulator comprising:

first and second switching regulators each having first and second input terminals;

first, second, third, fourth, fifth and sixth diodes each having an anode and a cathode, said anodes of said first, second and third diodes each being connected to a corresponding one of said first, second and third line output terminals, said cathodes of first, second and third diodes being coupled to said first input terminal of said first regulator, said cathodes of said fourth, fifth and sixth diodes each being connected to a corresponding one of said first, second and third line output terminals, said anodes of said fourth, fifth and sixth diodes being coupled to said second input terminal of said second regulator;



first, second and third connector terminals, said first connector terminal being connected to said cathodes of said first, second and third diodes, said second connector terminal being coupled to said fourth line output terminal, said third connector terminal being connected to said anodes of said fourth, fifth and sixth diodes;

means for selectively connecting said second input terminal of first regulator to one of said second and said third connector terminals; and

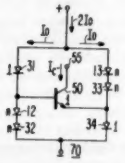
means for selectively connecting said first input terminal of said second regulator to one of said first and said second connector terminals.

3,846,696

CURRENT ATTENUATOR

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,176
Int. Cl. G05f *3/14*
U.S. Cl. 323—1 **15 Claims**



1. A current attenuator comprising:

a first terminal and a second terminal between which an input current may be applied;

a transistor having a base electrode and an emitter electrode and a base-emitter semiconductor junction therebetween and having a collector electrode;

a first number M of semiconductor junctions serially connected from said transistor base electrode to said first terminal;

a second number N of semiconductor junctions serially connected from said transistor emitter electrode, to said first terminal, one of the numbers M and N being one more than the other, each said semiconductor junction in the larger of said first and said second numbers having a higher conductivity on average than the conductivity on average of each semiconductor junction in the smaller of said first and said second numbers;

means responding to said input current flow between said first and said second terminals and splitting it into two portions, namely, first and second currents, each in fixed proportion to the other, said first current being applied between said base electrode and said first terminal and said second current being applied between said emitter electrode and said first terminal; and

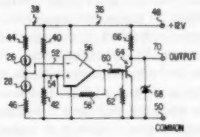
a third terminal to which said transistor collector electrode is connected for supplying an output current substantially smaller than said first and said second currents.

3,846,697

DIGITAL PICKUP

Otakar Cila, and Dudley D. Nye, Jr., both of Fort Lauderdale, Fla., assignors to Airpax Electronics Incorporated, Fort Lauderdale, Fla.

Filed Nov. 14, 1972, Ser. No. 306,287
Int. Cl. G01p *3/48, 1/02*
U.S. Cl. 324—34 GT **2 Claims**



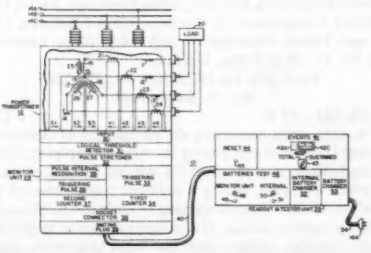
1. A digital pickup comprising a resistance bridge, at least one magneto-resistor being connected in each of two arms of said bridge, a permanent magnet, said magneto-resistors being symmetrically mounted on one pole of said magnet, a solid state switch having set and reset terminals, the output of said bridge being coupled across said set and reset terminals of said switch, said switch comprising an integrated circuit differential amplifier with positive feedback, a junction transistor, and a pair of pickup output terminals coupled to the emitter-collector circuit of said junction transistor.

3,846,698

OVERCURRENT EVENTS MONITORING SYSTEM

David K. Lawton, Anaheim, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1973, Ser. No. 400,600
Int. Cl. G01r *31/02;* **G04r** *19/16*
U.S. Cl. 324—51 **10 Claims**



1. In an overcurrent events monitoring system, a monitor unit for digitally distinguishing and counting momentary and sustained occurrences of excessive current magnitudes in a circuit under test, said monitor unit comprising:

a logical threshold detector including an input and an output, said input being responsive to each of said occurrences of excessive current magnitudes, and said output developing first logic signals of first and second states having transitions therebetween in one and opposite directions upon each of said occurrences and at the end of said occurrences, respectively;

a pulse stretcher including a logic gate circuit including an input and an output, said output developing second logic signals of first and second states having transitions therebetween in one and opposite directions, said input being responsive to said one direction of transistion of said first logic signals so as to develop a normal gate circuit transition in one direction to effect a transition in said second logic signals in said one direction, and said pulse stretcher further including a time delay circuit means connected between said input and said output of the gate circuit to effect a linearly extended transition in an opposite direction in said second logic signals in response to said opposite direction of transition in said first logic signals;

a first binary counter responsive to said one direction of transition in said second logic signals so as to accumulate the total of occurrences of excessive current magnitudes occurring at intervals substantially equal to or longer than the linearly extended transition in said second logic signals;

a pulse interval recognition circuit including a logic gate circuit including an input and an output, and a time delay circuit means connected between said input and said output and externally of said gate circuit, said input being responsive to said second logic signals, said output developing third logic signals of first and second states having transitions in one and opposite directions therebetween, said third logic signals having a transition in said one direction in response to a normal gate circuit transition in said one direction between said first and second states in response to the opposite direction of transition in said second logic signals, said third logic signal having a linearly extended transition in an opposite direction between said first and second states, said last named extended transition in said third logic signals being established by said time delay circuit means so as to be longer than the extended transition in said second logic signal, and

a second binary counter means responsive to said opposite direction of transition in said third logic signals so as to accumulate the number of sustained occurrences of excessive current magnitudes occurring during an interval substantially equal to or longer than said linearly extended transition in said third logic signals.

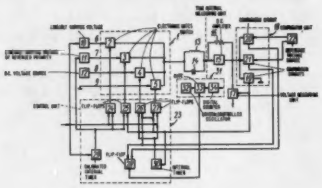
3,846,699

METHOD AND DEVICE FOR MEASURING PARAMETERS OF RESONANT LC CIRCUIT ELEMENTS

Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, ulitsa Uritskogo, 44/10, kv. 62; Eduard Konstantinovich Shakhov, ulitsa Gladkova, 13, kv. 5, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova 12, kv. 17, all of Penza, U.S.S.R.

Filed July 16, 1973, Ser. No. 379,728
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **6 Claims**

1. A method for measuring the parameters of elements in a resonant LC circuit comprising the steps of applying a linearly varying voltage to a resonant LC circuit formed of parallel-connected elements; setting a calibrated time interval at the end of which said linearly varying voltage is cut off; applying a linearly varying voltage of a polarity opposite to that of the linearly varying voltage that has been previously applied; interrupting said linearly varying voltage at the instant when the current passing through the resonant LC circuit becomes almost nil; measuring the current flowing through the resonant LC circuit after the interruption of said linearly varying voltage; applying a D.C. voltage to the resonant LC circuit; comparing the current caused in the resonant LC circuit by said D.C. voltage with two reference currents; measuring the time interval between the instants at which said current flowing through the resonant LC circuit alternately equals each of said



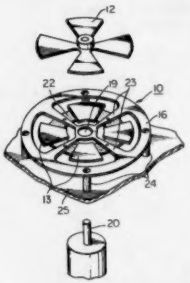
reference currents, respectively, the magnitude of the time interval together with said measured current being used for determining the parameters of the parallel-connected elements of the resonant LC circuit.

3,846,700

ELECTROSTATIC FIELD MEASURING APPARATUS

Hiroshi Sasaki, Tokorozawa, and Toshihiko Ohno, Higashimurayama, both of Japan, assignors to Rion Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1973, Ser. No. 336,499
Claims priority, application Japan, May 31, 1972, 47-54472
Int. Cl. G01r *31/02*
U.S. Cl. 324—72 **7 Claims**



1. In an electrostatic field measurement apparatus for detecting the intensity of an electric field adjacent a conducting surface, the combination comprising, a sensing electrode spaced from the conducting surface, means for supporting the sensing electrode including first and second insulators and a conductive feedback electrode, said first insulator disposed between the conducting surface and the feedback electrode, said second insulator disposed between the feedback electrode and the sensing electrode, an AC amplifier having an input connection connected to the sensing electrode as well as an output connection and a positive feedback connection, means for cyclically shielding the sensing electrode thereby to produce a fluctuating voltage thereon in the presence of an electric field, the positive feedback connection of the amplifier being connected to the feedback electrode so that said second insulator is included in a positive feedback path for the

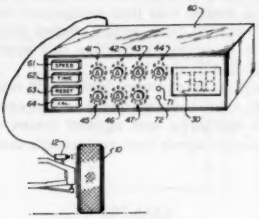
amplifier thereby to neutralize any tendency toward current leakage on the surface of the insulator from the sensing electrode to the conducting surface.

3,846,701

VEHICLE PERFORMANCE COMPUTER

Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Cleveland, Ohio

Filed May 10, 1971, Ser. No. 141,657
Int. Cl. G01p *3/36*
U.S. Cl. 324—175 **2 Claims**



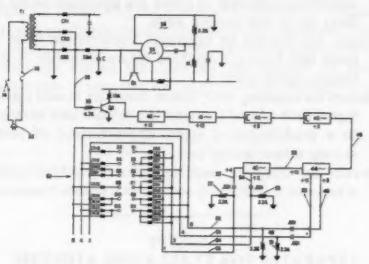
1. A vehicle performance computer comprising, in combination: a digital indicator; driver means coupled to and driving said digital indicator to indicate time in seconds thereon in accordance with the number of clock pulses received and counted thereby; pulse generator means coupled to said driver means for providing clock pulses thereto; gating means associated with said digital indicator and said driver means operable to prevent further updating of the information displayed by said digital indicator; signal pulse generator means for producing an electrical signal pulse each time the vehicle travels a pre-established increment of distance; signal pulse counter means for receiving and counting said electrical signal pulses; said signal pulse counter means being programmed to count a pre-determined number of said electrical signal pulses corresponding to the number of said electrical signal pulses occurring in the vehicle traveling a pre-determined distance and triggering said gating means to prevent further updating of the information displayed by said digital indicator, whereby the time indicated in seconds on said digital indicator represents the time elapsed in the vehicle traveling said internally measured pre-determined distance; switch means for coupling said electrical signal pulses to said driver means and for disconnecting said clock pulses therefrom, whereby the information displayed by said digital indicator is directly proportional to the velocity of the vehicle; a clock pulse counter for counting a pre-determined number of clock pulses, said number of clock pulses counted corresponding to a time interval to establish a constant of proportionality of 1.0 MPH; gating means enabled by said clock pulse generating when said pre-determined number of clock pulses have been counted to gate said first-mentioned gating means to prevent further up-dating of the information displayed by said digital indicator, whereby said displayed information corresponds to the velocity of said vehicle; said digital indicator including a first portion thereof which is driven by said signal pulses coupled to said driver means to indicate the velocity of said vehicle in whole numbers and a second portion which is driven to indicate the hundredths of said velocity of said vehicle, said second portion being operated by second driver means independent of said driver means for said first portion; and means triggered by said signal pulses and producing 100 pulses per second during the time interval between each of said signal pulses, said 100 pulses per second being coupled to and driving said second driver means, whereby the information displayed by said second portion of said digital indicator indicates the hundredths velocity of said vehicle.

3,846,702

TIME ACCUMULATOR MAN-HOURS EXPENDED

Michael M. Dziki, Milton; George Schultz, Newton, and Elliott W. Markow, Waltham, all of Mass., assignors to ISM Corporation, Woburn, Mass.

Filed June 21, 1973, Ser. No. 372,075
Int. Cl. G04f *11/06*
U.S. Cl. 324—186 **16 Claims**



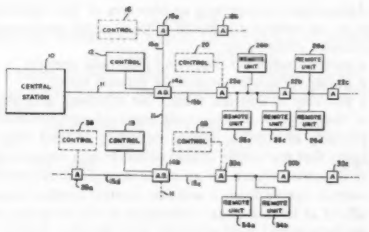
1. An accumulator for registering time expended by one or more operating units, which accumulator comprises;
means for establishing a plurality of different frequency signals, each of which signals is representative of a particular number of operating units,
counting means including means for visually displaying a cumulative count corresponding to expended time,
and selection means including a plurality of mutually exclusive switch means that individually correspond to a different one of said frequency signals and are individually employed for coupling a corresponding one of said frequency signals to the counting means.

3,846,703

NOISE CONTROL SYSTEM FOR TRANSMISSION NETWORK

Floyd C. Stewart, Phoenix, Ariz.; Daniel W. Weeks, Irving, and Brian E. Belcher, Dallas, both of Tex., assignors to TOCOM Inc., Irving, Tex.

Filed Feb. 28, 1973, Ser. No. 336,618
Int. Cl. H04b *1/00*
U.S. Cl. 325—53 **19 Claims**



1. In a two-way, broad-band, high frequency coaxial communications system,
a central transmitting and receiving unit,
a plurality of remote transmitting and receiving units,
a primary coaxial trunk line connected to said central unit,
a plurality of coaxial feeder lines each connected to one or more of said remote units,
means connecting said feeder lines to said trunk line at spaced points therealong to establish signal transmission paths between said central unit and said remote units,

a plurality of bi-directional amplifier means interposed at selected points in said transmission paths, each including a forward amplifier for amplifying signals transmitted downstream from said central unit to one or more selected remote units and a return amplifier for amplifying signals transmitted upstream from one or more remote units to said central unit, and

a control means including:

means for normally disabling selected ones of said return amplifiers sufficient to block the upstream signal paths from all of said remote units;

means for sensing an upstream transmission from a remote unit having a disabled return amplifier in its upstream signal path;

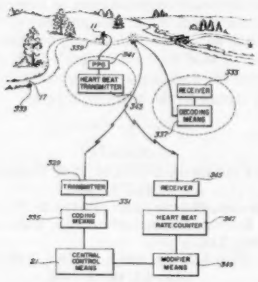
means for enabling each return amplifier in said upstream signal path of said transmitting remote unit in response to a predetermined signal characteristic of said upstream transmission; and

means for disabling each said enabled return amplifier when said transmitting remote unit ceases transmission.

3,846,704
APPARATUS FOR EVALUATING ATHLETIC PERFORMANCE

Robert C. Bessette, 4425 Owendale Dr., Fort Worth, Tex. 76116

Filed Dec. 13, 1972, Ser. No. 314,801
Int. Cl. H04b *1/00*
U.S. Cl. 325—66 **22 Claims**



1. Apparatus for apprising an observer of the relativezrformance of an athlete compared with a useful predetermined performance comprising:

a. a power source for supplying electrical energy;

b. a timing means for indicating elapsed time;

c. a plurality of apprisal means for apprising said observer of the progress of said predetermined performance; said plurality of apprisal means including at least respective lights that are visible to said observer and connected with said power source so as to be energized responsive to output signals from a settable central control means to afford at least a visual indication of the progress of said predetermined performance; said apprisal means being spaced apart and arranged so as to be compared by an observer with the progress of said athlete along a path said athlete will travel; each traverse along said path by said athlete being referred to as a lap;

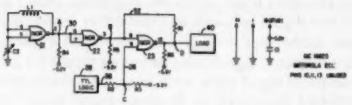
d. settable central control means for sequentially energizing respective ones of said plurality of apprisal means responsive to elapsed time and to said predetermined performance set into said settable central control means; said settable central control means being connected with said power source and said apprisal means for sequentially energizing respective said apprisal means to display progress of said predetermined performance; said settable central control means including a time setting means for setting said predetermined performance into said settable central control means; said settable central control means including means for dividing said predetermined performance into equal time increments, which time increments represent the respective distance increments between said plurality of apprisal means generate respective output signals after elapse of respective said time increments; said central control means including a timing means that emits a plurality of time signals for repeated indications of small elapsed time intervals; a time counter that is connected with said timing means for accumulating said time signals; and a time comparator means for signalling when an accumulation of said time signals is equal to said desired time interval set into said time setting means; said time comparator means being connected to said time setting means and said time counter for energizing respective said apprisal means sequentially and uniformly; and

e. communication links communicating with respective said plurality of apprisal means and with said central control means for energizing said apprisal means sequentially with said output signals from said settable central control means.

3,846,705
PULSE AMPLITUDE MODULATED SIGNAL GENERATOR

William W. Davis, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 16, 1973, Ser. No. 388,869
Int. Cl. H04l *27/04*
U.S. Cl. 325—141 **4 Claims**



1. A pulse amplitude modulated signal generator, comprising:

first, second and third NOR gates, each having first and second inputs and an output;

inductor means coupling the output of said first NOR gate to the common coupled first and second inputs of said first NOR gate;

capacitor means coupling the common coupled first and second inputs of said first NOR gate to a first voltage source;

said first NOR gate coupling an oscillator signal of a frequency F_0 to its output;

means coupling the output of said first NOR gate to the common coupled first and second inputs of said second NOR gate;

first resistor means coupling the output of said first NOR gate to a second voltage source;

means coupling the output of said second NOR gate to the first input of said third NOR gate;

second resistor means coupling the output of said second NOR gate to a third voltage source;

said second NOR gate buffering said oscillator signal and coupling a buffered signal to its output;

pulse signal source means;

means coupling said pulse signal source means to the second input of said third NOR gate for coupling a binary pulse signal of a frequency F_M to the second input of said third NOR gate;

third resistor means coupling the first input of said third NOR gate to the output of said third NOR gate;

fourth resistor means coupling the output of said third NOR gate to a fourth voltage source.

3,846,706
CONTROL SYSTEM

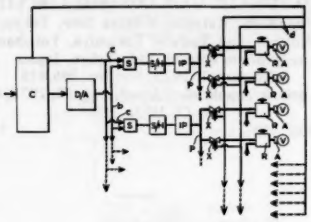
Allen Thompson, Northwich, England, assignor to Sim-Chem Limited (formerly Simon-Carves Chemical Engineering Ltd.), Cheadle Heath, Stockport, England

Continuation-in-part of Ser. No. 126,180, March 19, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 337,844

Claims priority, application Great Britain, Apr. 9, 1970, 16871/70

Int. Cl. G06f *15/46*; **F17d** *3/00*

U.S. Cl. 235—151.1 **9 Claims**



1. A control system for regulating cyclically a group of individual control devices comprising a signal generating programming station (*c*), at least one combination of control elements including a set/hold amplifier (S/H) connected to receive repeatedly from said station a plurality of consecutive analogue signals quantifying the required settings for the respective control devices, a pneumatic pressure line (*p*), a current to pressure converter (IP) connected to sense the output from said amplifier and act in response thereto to control the pressure in said pneumatic line, a plurality of pneumatic pressure responsive setting devices (A) each connected to said pneumatic line via a normally closed valve (X), each of said pressure responsive setting devices being operatively connected to one of the control devices, and actuators (at X) connected to be operated from said station for opening each of said valves to connect its respective associated setting means with said pneumatic line during each of the successive periods when the current to pressure converter is receiving an analogue signal quantifying the required setting by the control device associated with said respective associated setting device.

3,846,707
CHANNEL SELECTION DEVICE

Yoichi Sakamoto, and Yukio Koyanagi, both of Osaka, Japan, assignors to Matsushita Electric Co., Ltd., Kadoma-shi, Osaka-fu, Japan

Filed Nov. 1, 1971, Ser. No. 194,421

Claims priority, application Japan, Nov. 4, 1970, 45-97388; Nov. 4, 1970, 45-97389; Nov. 4, 1970, 45-97390; Nov. 4, 1970, 45-97391; Nov. 4, 1970, 45-97392; Nov. 4, 1970, 45-97393; Nov. 4, 1970, 45-97394; Nov. 4, 1970, 45-97395; Nov. 4, 1970, 45-97396; Nov. 4, 1970, 45-97397; Nov. 4, 1970, 45-97398; Nov. 4, 1970, 45-97399; Nov. 4, 1970, 45-97400; Nov. 4, 1970, 45-97401; Nov. 4, 1970, 45-97402

Int. Cl. H04b *1/32*

U.S. Cl. 325—334 **13 Claims**

1. A channel selection device for use with a television receiver comprising

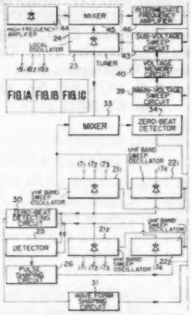
two frequency-sweep oscillator circuits for oscillating at a constant frequency and for also sweeping their respective oscillating frequencies in respective predetermined frequency ranges,

detecting means connected to said oscillator circuits for detecting the difference in oscillation frequency between said two frequency-sweep oscillator circuits,

means for reversing the functions of said two frequency-sweep oscillator circuits responsive to the detected difference in oscillation frequency between the two frequency-sweep oscillator circuits being a predetermined value such that one of said two oscillator circuits which was producing a constant frequency commences sweeping its frequency over said predetermined frequency range while the other oscillator circuit terminates a sweeping operation and commences to produce a constant frequency output,

means for controlling the functioning of said two frequency-sweep oscillator circuits to alternately repeat the function reversal at each detected predetermined frequency value,

counting means for counting the number of function reversals of said two frequency-sweep oscillator circuits,



register means for registering a desired receiving channel number,

means connected to said counting means and register means for generating a coincidence signal corresponding to a coincidence between signals in said register means and said counting means,

means for stopping the one of said two frequency-sweep oscillator circuits operating in a sweeping state when the coincidence signal is detected,

a tuner for said television receiver, and

means for connecting said one oscillating circuit operating in a sweeping function which is stopped by said coincidence signal to operate as the local oscillator of said tuner.

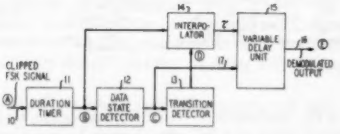
3,846,708
DIGITAL DEMODULATION OF FREQUENCY-SHIFT KEYED DATA SIGNALS

John Vincent Franco, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 15, 1973, Ser. No. 341,454

Int. Cl. H04l *27/14*

U.S. Cl. 329—104 **11 Claims**



1. In a communications system encoding the states of a digital data signal in the discrete frequencies assumed by a transmitted carrier signal, a demodulator for recovering said data signal states from said carrier signal comprising

means for measuring the duration of each cycle of said carrier signal,

means for resolving each duration measurement into a corresponding data-signal state,

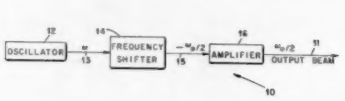
means jointly responsive to a change in resolved data-signal states and to the two most recent duration measurements for estimating the delay interval between the intermediate carrier-signal transition and the true data-state transition, and

variable means controlled by said estimating means for producing an output data transition delayed from the most recent carrier-signal transition by said estimated delay interval.

3,846,709
LASER SYSTEM EMPLOYING STIMULATED MULTIPLE-PHOTON EMISSION PROCESS

Charles K. Rhodes, Pleasanton, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 9, 1973, Ser. No. 331,154
Int. Cl. H01s *3/10*
U.S. Cl. 330—4.3 **5 Claims**

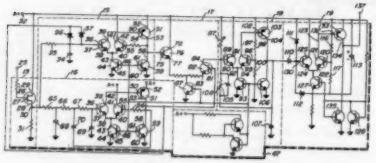


1. A laser system comprising: an oscillator means for producing a narrow pulse of light at one frequency, a frequency shifter means positioned to receive said pulse from said oscillator means and for converting at least a fraction of said pulse to a pulse at a different frequency, and electron beam activated amplifier means containing an active lasing medium capable of producing stimulated multiple-photon emission when illuminated by an intense electromagnetic wave positioned to receive said different frequency pulsed from said frequency shifter means and for amplifying said different frequency pulse, producing pulsed outputs of high energy, short wavelength, and narrow pulsewidth.

3,846,710
DC RESTORATION AMPLIFIER WITH AUTOMATIC ZERO OFFSET ADJUSTMENT

Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 2, 1973, Ser. No. 329,266
Int. Cl. H03f *21/00*
U.S. Cl. 330—11 **14 Claims**

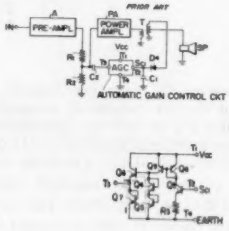


1. A DC restoration amplifier for first signals having a first frequency range and DC offset signals having a second frequency range lower than said first frequency range including in combination; first filter means having a filter response characteristic for coupling therethrough at least the range of frequencies of the first signals and offset signals coupled thereto, second filter means for coupling therethrough the range of frequencies of the DC offset signals coupled thereto, summing means coupled to said first and second filter means for subtracting said DC offset signals coupled thereto from said second filter means from said first signals and DC offset signals coupled thereto from said first filter means and develop resultant signals proportional to said first frequency range signals, and DC restoration means coupled to said summing means and responsive to said resultant signals to develop second signals corresponding to said first signals and having a DC reference bias of one-half the peak-to-peak amplitude of said second signals.

3,846,711
AUTOMATIC GAIN CONTROL CIRCUIT

Kazuya Takahashi, Katsuta; Mitsuya Sato, Tokyo; Kaname Ohta, Katsuta, and Tadashi Takamiya, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1973, Ser. No. 386,415
Claims priority, application Japan, Aug. 30, 1972, 47-86305
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **17 Claims**



1. An automatic gain control circuit comprising amplifier means for amplifying an automatic gain control signal, variable impedance means having a non-linear voltage characteristic for providing a varying impedance in response to the amplified automatic gain control signal, an impedance control circuit connecting the output of said amplifier means to said variable impedance means, and bypass means including a plurality of forward biased PN junction devices series connected to the input of said impedance control circuit and having a non-linear voltage characteristic for bypassing AC signal components to ground.

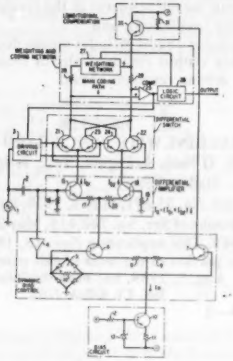
3,846,712
DIFFERENTIAL AMPLIFIER WITH DYNAMIC BIASING

Frederick John Kiko, Sheffield Village, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 12, 1973, Ser. No. 340,267
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **7 Claims**

1. A dynamically biased amplifier comprising first and second transistors, d.c. biasing means connected to the base and emitter electrodes of each of said first and second transistors to bias said first and second transistors for operation as a differential amplifier, an input signal to be differentially amplified connected to the base electrode of said first transistor, a third transistor, a source of biasing current for maintaining a constant current therethrough, means connecting the collector-emitter paths of said first and second transistors in parallel, means serially connecting the parallel combination of the collector-emitter paths of said first and second transistors, the collector-emitter path of said third transistor, and said source of constant biasing current, a fourth transistor having its collector-emitter path connected across said source of biasing current to provide an alternate current path for a portion of the constant current maintained by said source of biasing

current and means connecting said input signal to the base electrode of said third transistor and to the base electrode of said fourth transistor to vary the biasing current flow through the parallel collector-emitter paths of said first and second transistors in proportion with the magnitude of said input signal and to vary the current flow through the collector-



emitter path of said fourth transistor in inverse relationship to the magnitude of said input signal, the current flow in the collector-emitter path of said fourth transistor being equal to the difference between the constant current maintained by said source of biasing current and the biasing current flow through the parallel collector-emitter paths of said first and second transistors.

3,846,713

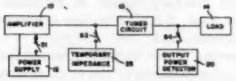
METHOD AND APPARATUS FOR TUNING AN AMPLIFIER CIRCUIT

Harold James Kittel, Dayton, Ohio, assignor to R. L. Drake Company, Miamisburg, Ohio

Continuation-in-part of Ser. No. 261,683, June 12, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 415,928

Int. Cl. H03h *7/38*

U.S. Cl. 330—192 **8 Claims**



1. Method of adjusting a tuned circuit which receives power from an amplifier and which transfers power to a load including the steps of

lowering the power output of said amplifier thereby changing its characteristics,

temporarily connecting an impedance device to the output of said amplifier, said impedance device approximating the optimum load impedance for said amplifier when operated at its normal power level,

adjusting the tuned circuit for maximum output to said load at the lower power level,

removing said temporary impedance device, and

thereafter operating said amplifier at its normal power level without further need for adjustment of the tuned circuit.

3,846,714

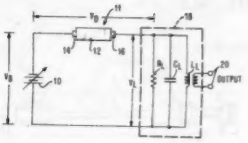
MICROWAVE OSCILLATOR

John B. Gunn, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 524,406, Feb. 2, 1966, abandoned. This application Nov. 25, 1968, Ser. No. 778,861

Int. Cl. H03b *7/06*

U.S. Cl. 331—107 G **13 Claims**



1. A microwave oscillator circuit comprising:

a. a bulk effect device including a body of semiconductor material capable of having nucleated therein domains of electric field concentration which propagate in said body;

b. said body being capable of having domains nucleated therein when the voltage across said device exceeds a first threshold voltage V_T at a time when no domain is propagating in the body and when the voltage across the device exceeds a second higher threshold voltage V_{T1} even when a domain is propagating in the body;

c. means including a voltage source and a load circuit connected to said device for causing domains to be nucleated, propagated and extinguished in said body and produce voltage oscillations across said device;

d. said oscillations causing the voltage across said device to oscillate above and below one of said threshold voltages.

3,846,715

MULTIPLE DYE STREAM LASER

J. Michael Yarborough, Santa Clara, Calif., assignor to Coherent Radiation, Palo Alto, Calif.

Filed May 30, 1973, Ser. No. 365,316

Int. Cl. H01s *3/20*

U.S. Cl. 331—94.5 **8 Claims**

1. A dye laser comprising:

a. an optical resonator cavity;

b. means for providing a flat, unsupported fluid stream of dye within said optical resonator cavity to intersect the optical cavity thereof, said dye providing means comprising:

i. a nozzle from which said fluid streams exit into said optical resonator cavity;

ii. a plurality of sources of different dyes having different ranges of lasing wavelengths;

iii. first means for selectively providing any single one of said plurality of dyes to said nozzle to provide said unconfined fluid stream; and

iv. means for collecting said unsupported fluid stream after it passes through said optical path; and

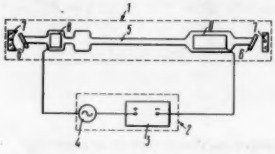
c. means for optically pumping said dye stream.

3,846,716

METHOD OF REGULATING LIGHT EMITTING POWER OF LASER AND APPARATUS FOR EFFECTING SAME

Mikhail Konstantinovich Dyatlov, ulitsa Lenina, 13-a, kv. 45; Evgeny Petrovich Ostapchenko, ulitsa Schedrina, 4, kv. 58; Vladimir Anatolievich Stepanov, ulitsa Schedrina, 4, kv. 61, and Jury Nikolaevich Kulikov, ulitsa Libknekhta, 95, all of Ryazan, U.S.S.R.

Filed July 3, 1973, Ser. No. 376,206
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 11 Claims



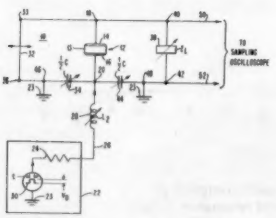
1. Method of regulating the light emitting power of a laser comprising a cavity and a gas discharge tube having electrodes and filled with a mixture of an inert gas and vapours of chemical elements, which mixture is the laser medium of said laser, consisting in applying a DC field to the electrodes, which field initiates a DC discharge in said laser medium exciting the latter, whereby stimulated light emission is ensured, then applying to the same laser medium an AC field and varying the frequency of the AC field within the range of frequencies of unsteady oscillations of the laser medium upon initiation therein of said DC discharge, whereby the light emitting power is varied.

3,846,717

BULK EFFECT SEMICONDUCTOR OSCILLATOR INCLUDING RESONANT LOW FREQUENCY INPUT CIRCUIT

Paul L. Fleming, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1966, Ser. No. 524,594
Int. Cl. H03b 7/06; H03c 1/14
U.S. Cl. 332—52 7 Claims



1. In an oscillator circuit of the type which includes a body of single conductivity type semiconductor material, to which there is applied an electric field above a threshold field at which the body exhibits a negative resistance characteristic due to a change in the mobility of the conduction carriers in the body, to produce output high frequency oscillations in an output means connected to the body, the improvement comprising:

a. input means connected to said body for applying an input voltage across the body which causes the threshold field for the body to be exceeded and said high frequency oscillations to be produced;

b. said input means including means connected to said body forming a driving circuit resonant at a frequency lower than the frequency of said high frequency output oscillations;

c. said negative resistance exhibited by said body when said threshold is exceeded to produce said high frequency oscillations causing the voltage in said driving circuit to resonate at said lower frequency;

d. said output means connected to said body includes output circuit means resonant at the frequency of said high frequency oscillations; and

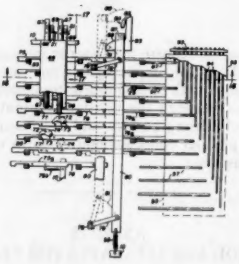
e. said oscillator circuit includes means decoupling said high frequency output resonant circuit from said lower frequency driving resonant circuit.

3,846,718

VOTING MACHINE WITH PUNCH CARD ATTACHMENT

Cothburn M. O'Neal, Arlington, Tex., assignor to Riverside Press, Inc., Dallas, Tex.

Division of Ser. No. 35,671, May 8, 1970, Pat. No. 3,630,434, which is a division of Ser. No. 740,415, May 27, 1968, Pat. No. 3,524,969. This application Nov. 15, 1971, Ser. No. 199,069The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.
Int. Cl. G06k 1/08
U.S. Cl. 234—1 11 Claims



1. In a voting machine having multiple selection keys, multiple means for registering the voter selections comprising:

a counter corresponding to each selection key,

means for receiving a recording medium, said means including marking means adapted to cooperate with said receiving means to record the voter selections on said recording medium,

mechanical linkage means interconnecting said keys and said marking means whereby said linkage means partially blocks said marking means to establish a mechanical pattern on said marking means corresponding to said voter selections, and

voting registering means including means for advancing the counters corresponding to the voter selections and means for simultaneously actuating said mechanical linkage to register said marking means with said recording medium thereby transferring said mechanical blocking pattern in its entirety simultaneously to said recording medium.

3,846,719

NOISE REDUCTION SYSTEMS

Ray Milton Dolby, c/o Dolby Laboratories, 590 Wandsworth Rd., London, England

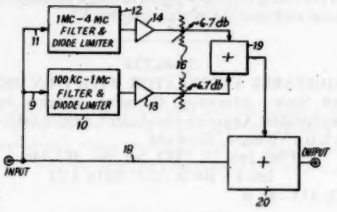
Continuation of Ser. No. 173,261, Aug. 19, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 397,159
Int. Cl. H03g 7/06; H03h 7/10; H04b 1/64
U.S. Cl. 333—14 71 Claims

1. A signal processing system which responds to an input signal to produce an output signal with modified dynamic range, said signal processing system comprising

a main signal circuit responsive to the input signal to provide in a specified frequency band a first signal with dynamic range linearity relative to the input signal;

means in the main signal circuit for combining linearly a second signal in said specified frequency band with the first signal to provide the output signal; and

a further signal circuit responsive to a signal from the main signal circuit for providing the second signal such as to affect the level of the output signal significantly at very low input signal levels, the further signal circuit including one or more variable gain elements with outputs thereof which are substantially free of non-linear distortion at all frequencies in said specified frequency band, the outputs



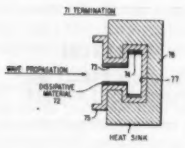
of said variable gain elements being coupled to the output of the further signal circuit to provide the second signal, said variable gain elements having the characteristics that below predetermined low levels there is no gain reduction of signals in said further signal circuit and above said low levels there is substantial gain reduction,

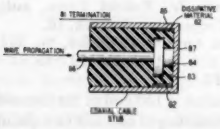
the outputs of said variable gain elements and the second signal produced thereby being limited to levels corresponding to small fractional parts of the maximum signal level applied to the further signal circuit, where said small fractional parts are in the region of an order of magnitude less than unity, or smaller.

3,846,720
COMPACT MICROWAVE TERMINATION AND USES THEREOF

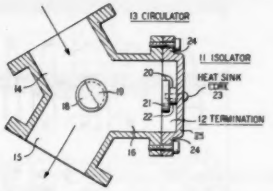
Theodore Warren Mohr, Whitehall, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 15, 1973, Ser. No. 416,036
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 R **12 Claims**





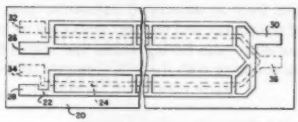
1. Apparatus for terminating an enclosed wave propagation medium having a characteristic impedance, comprising a section of said medium, a reflective end member for said section, and means for loading said section, including a body composed of material absorptive for the propagating waves and shaped into first and second portions providing said loaded section with respectively associated impedances lower than said characteristic impedance and having respective lengths in the direction of wave propagation presenting resistive impedance at the input to said section, the body being rendered shorter than a quarter wavelength in that the second portion is intermediate said first portion and said end member and provides said loaded section with a respectively associated impedance intermediate the impedance provided by said first portion and said characteristic impedance.

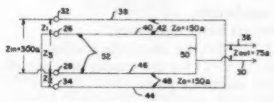


3,846,721
TRANSMISSION LINE BALUN

William Baird Fritz, Hershey, and Emerson Marshall Reyner, II, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 8, 1973, Ser. No. 386,812
Int. Cl. H01p *5/10;* **H03h** *7/42*
U.S. Cl. 333—26 **12 Claims**





1. An improved transmission line balun for providing an impedance transition over a desired operating range of frequencies comprising in combination:

a flexible substrate having two substantially parallel spaced side portions;

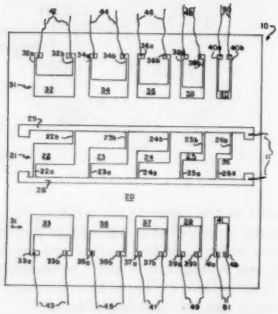
a first circuit formed on a first side of said substrate extending from one end of said substrate to the opposite end thereof, said first circuit including two conductors connected together adjacent one end of said substrate; and

a second circuit formed on the second side of said substrate extending from one end of said substrate to the opposite end thereof, said second circuit including first and second conductors each of which is so positioned as to lie parallel to a respective conductor of said first circuit and being connected together adjacent said one end of said substrate, said conductors of said first and second circuits forming a pair of transmission lines, said first and second circuits having an electrical length which is not equal to one half wave length or multiple thereof at any operating frequency.

3,846,722
SURFACE WAVE PRESELECTOR

John deKlerk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1973, Ser. No. 347,979
Int. Cl. H03h *9/26, 9/32;* **H01v** *7/00*
U.S. Cl. 333—72 **4 Claims**



1. A surface wave preselector comprising:
a. piezoelectric base;
b. a plurality of interdigital transmitter grids deposited on said base, each of said grids adapted to receive an input signal and generate a surface wave in response to a selected frequency of said input signal;
c. a plurality of interdigital receiver grids deposited on said base, each of said grids being adapted to receive a surface wave of selected frequency transmitted in said base by a transmitter grid and produce an output signal in response thereto, each of said receiver grids being positioned opposite from an associated transmitter grid, and wherein said transmitter and receiver grids each includes a plurality of electrodes having widths and spaces therebetween in accordance with the following general formula

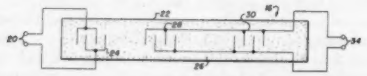
$$w_m = v/4\ (1/f_1 + (m-1)\ \delta f),$$

where
w_m = the electrode width or space;
$\delta f = \Delta f/3N$;
Δf = the bandwidth;
f_1 = the lowest band frequency;
m = 1,3,5...3N for the electrode widths;
m = 2,4,6...(3N−1) for the spaces between electrodes; and
N = total electrode pairs.

3,846,723
SURFACE WAVE NARROW BANDPASS FILTER

Philip L. Writer, and Maurice L. Schiff, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 22, 1973, Ser. No. 372,560
Int. Cl. H03h *9/00*
U.S. Cl. 333—72 **2 Claims**

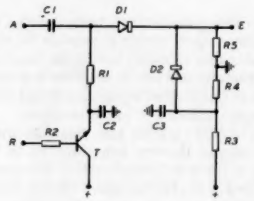


1. Bandpass filter apparatus comprising:
an acoustic-wave propagating medium;
a first pair of electrically conductive, U-shaped members deposited on said medium in a symmetrical, interleaved manner with respect to each other and being responsive to incoming signals to launch acoustic waves in said medium at frequencies on either side of a center frequency f_o, and to launch no acoustic waves at said frequency f_o;
second and third pairs of U-shaped members deposited on said medium and spaced apart from said first pair and disposed thereon in an in-line and parallel manner with respect to said first pair,
said second and third pairs being electrically connected to each other in a polarity-reversed sense and further being spaced from each other an integral number of wavelengths, $N\lambda_o$, where N is equal to any integer and $\lambda_o = V_o/f_o$; and,
terminal means connected to the output of said third pair for providing an output signal having a bandwidth proportional said number of wavelengths, $N\lambda_o$.

3,846,724
ADJUSTABLE ATTENUATOR WITH P-I-N DIODES

Gerhard Maier, Ahornweg, Germany, assignor to SABA Schwarzwalder Apparate-bau-Anstalt August Schiver Sohne G.m.b.H., Villingen, Germany

Filed July 25, 1973, Ser. No. 382,446
Int. Cl. H03h *7/24;* **H01p** *1/22*
U.S. Cl. 333—81 R **2 Claims**



1. An adjustable π network form of attenuator comprising:
a longitudinal branch including a first p-i-n diode interconnecting antenna and signal receiver terminals;
an antenna cross branch including a resistor coupled to said antenna terminal and a transistor coupled to said resistor, to a potential source, and to a variable amplifier source, said antenna cross branch including a high frequency short circuiting capacitor coupling said resistor and transistor to a potential reference level; and
a receiver cross branch including a second p-i-n diode coupling said receiver terminal to a positive potential source.

ERRATUM

For Class 234—1 see:
Patent No. 3,846,718

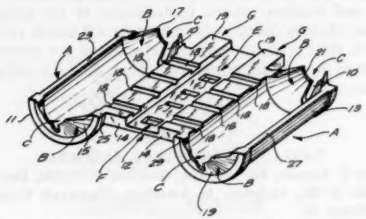
3,846,725
COIL RETAINER

Donald B. Mears, Jr., Enfield, Conn., assignor to General Instrument Corporation, Newark, Ill.

Filed Apr. 30, 1973, Ser. No. 355,976
Int. Cl. H01f *27/30*
U.S. Cl. 336—92 **32 Claims**

1. In combination, a FM coil or the like and a coil retaining device for the mounting of said coil on a circuit board, the coil being of coil housing on a circuit board, the coil being of the type having at least one lead extending therefrom to connect it to the circuit board, said device comprising a coil form upon which the coil is wound, a pair of coil form retaining members which assemble in opposing relationship to form an enclosure

for the coil, each of said members having a portion situated on each end thereof, each of said end portions having an aperture therein, said apertures engaging and securely retaining said coil form, means for articulately connecting one of the opposing edges of each of said members such that said members



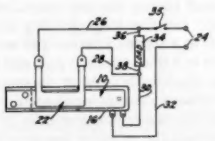
may be moved between assembled and separated positions, said connecting means having a lead aperture forming a passage therethrough when said members are assembled such that said coil lead may be electrically connected to said circuit board.

3,846,726

BIMETAL ACTUATOR WITH ELECTRICAL RESISTANCE HEATER

Frank J. Hierholzer, Jr., Florissant, and John A. Ancona, St. Louis, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 15, 1973, Ser. No. 341,537
Int. Cl. H01h *7/22*
U.S. Cl. 337—107 **5 Claims**



1. A bimetal actuator comprising a bimetal element with support means fixing a portion thereof so that another portion moves relative to the support means when the element warps and a thin flexible resistance heater bonded to the high expansion side of said element, said heater comprising a thin, flexible, insulating film and a thin, narrow, flexible, metallic, electrical resistance element bonded to one side thereof, the other side of said film being bonded to the high expansion side of said bimetallic element, said insulating film including portions thereof extending freely from said bimetal element, and said resistance element including integral lead portions at the ends thereof, which lead portions are considerably wider than said resistance element and coextend with and are bonded to said freely extending film portions thereby to provide integral flexible leads.

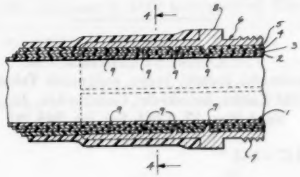
3,846,727

CURRENT LIMITING DEVICE

Emerson R. Harmon, Hartland, Wis., assignor to The Amalga Corporation, Menomonee Falls, Wis.

Filed July 9, 1973, Ser. No. 377,426
Int. Cl. H01h *85/36*
U.S. Cl. 337—246 **7 Claims**

1. A current limiting fuse holder, which comprises a tubular housing formed of layers of filament wound fibers impregnated with a thermosetting resin, at least one terminal fitting having internal teeth secured to an end of the housing by the teeth being embedded within different layers of filament



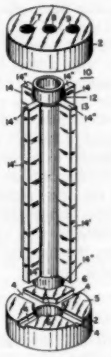
wound fibers, and means overlaying the terminal fitting to lock the fitting in place.

3,846,728

HIGH-VOLTAGE FUSE INCLUDING INSULATING MANDREL FOR SUPPORTING FUSIBLE ELEMENTS

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Oct. 23, 1973, Ser. No. 408,320
Int. Cl. H01h *85/04*
U.S. Cl. 337—159 **9 Claims**



1. A high-voltage fuse including
a. a tubular casing of electric insulating material;
b. a pair of terminal plugs closing the ends of said casing, each of said pair of terminal plugs having a pair of narrow grooves in the axially inner end surface thereof arranged at right angles to each other, and each of said pair of terminal plugs having a circular recess in the axially inner end surface thereof exceeding in depth the depth of said pair of grooves, and one of said pair of plugs having an eccentric internally screw-threaded filling hole normally closed by a plug means;
c. a post of electric insulating material arranged in the center of said casing and projecting with each end thereof into said recess in one of said pair of terminal plugs, said post having grooves in the lateral surface thereof extending in a direction longitudinally of said post and being angularly displaced 90°;
d. substantially rectangular plates of heat resistant electric insulating material arranged inside said casing each having relatively long edges and relatively short edges and each engaging with a radially inner relatively long edge thereof one of said grooves in said post and each engaging with an axially outer relatively short edge thereof one of said pair of grooves in the axially inner end surfaces of said pair of terminal plugs;

e. a fuse link wound helically around the radially outer edges of said plates; and

f. a pulverulent arc-quenching filler inside said casing filling the space thereof unoccupied by said post, said plates and said fuse link.

3,846,729

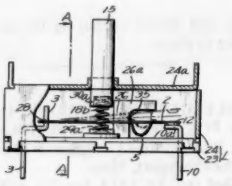
CURRENT LIMITER

Mitsuo Sorimachi, Isezaki, Japan, assignor to Tokyo Hoshiden Kabushiki Kaisha, Isezaki-shi, Gumma-ken, Japan

Filed Mar. 27, 1973, Ser. No. 345,397

Int. Cl. H01h *37/74*

U.S. Cl. 337—343 **9 Claims**



1. A current limiter comprising a first and a second terminal mounted in a casing, a thin blade-shaped bimetal electrically connected with the first terminal within the casing and incapable of providing a contact pressure by itself, bias means for energizing the bimetal with a bias force acting lengthwise thereof to cause it to assume either of two stable positions in which the plane of the bimetal is respectively located on opposite sides of a critical line, said bias means serving to provide a contact pressure, a contact mounted on the surface of the bimetal and adapted to be urged against the second terminal in one of the stable positions and to move away from the second terminal in the other stable position, said bimetal when located in said other stable position being incapable of returning to said one stable position by itself, and reset means for selectively returning the bimetal from said other stable position to said one stable position.

3,846,730

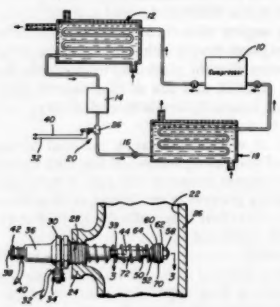
PROPORTIONING MOISTURE SENSING DEVICE FOR REFRIGERATION SYSTEMS

Samuel L. Hamilton, 3800 N.W. 22nd Ave., Miami, Fla. 33142

Filed Mar. 12, 1973, Ser. No. 340,373

Int. Cl. H01c *13/00*

U.S. Cl. 338—34 **10 Claims**



1. A sensing device for detecting the presence of low concentrations of moisture and moisture related contaminants in refrigerant systems comprising an anode and cathode disposed in spaced relation in the flow path of the refrigerant system and adapted to be connected into an electrical circuit, absorbent means disposed between the anode and cathode and in the flow path with the absorbent means including material capable of change of electrical conductivity in response to moisture absorption including dissolved and undissolved moisture and moisture related contaminants in the refrigerant system whereby changes of conductivity will enable electrical flow in the circuit for enabling detection of the presence of moisture or moisture related contaminants in the refrigerant system.

3,846,731

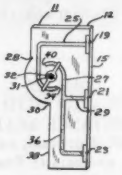
VARIABLE RESISTANCE ASSEMBLY

Christ J. Dumas, Forest View, and Leo J. Aubel, Deerfield, both of Ill., assignors to American Plasticraft Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,929

Int. Cl. H01c *9/02*

U.S. Cl. 338—127 **5 Claims**



1. A variable resistance assembly comprising an electrically non-conductive substrate having at least three terminal pads, first and second electrically resistive paths on said substrate, said paths being electrically separated one from the other, the first resistive path having one end connected to one terminal and the second resistive path dividing into a first portion which connects to a second terminal pad and another portion which connects to a third terminal pad, and the resistive paths each having an electrically open or unconnected end, and an electrically conductive contactor engaging said first and second paths, said contactor being selectively adjustable to increase and decrease the effective length of the resistive paths and hence the effective electrical resistance thereof.

3,846,732

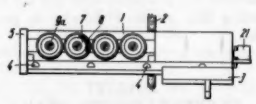
TUNER HOUSING WITH CONTACT BRIDGE MEANS

Wolfgang Labude, and Karl-Heinz Bauer, both of Bad Neustadt, Germany, assignors to FA."PREH. Elektrofeinmechanische Werke, Jakob PREH, NACHF", Bad Neustadt-/Saale, Germany

Filed Oct. 12, 1973, Ser. No. 405,785

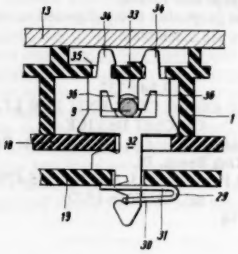
Int. Cl. H01c *9/02*

U.S. Cl. 338—133 **12 Claims**



1. A housing for a tuner for radio and television receivers comprising an elongated enclosure having longitudinal side walls, a plurality of control knobs along each of said side walls, a rotatable spindle shaft extending from each of said knobs and the shafts arranged in aligned pairs with the inner ends of the shafts of a pair facing each other, sliders moveable along

said shafts in response to rotation thereof, an insulator wall adjacent to said shafts and extending over said enclosure, electrical resistance means on said insulator wall and traversed by said sliders for the tuning of capacitance of diodes, a plurality of electrical conducting paths on said insulator wall electrically connecting said electrical resistance means thereon, a printed circuit board having a plurality of electrical



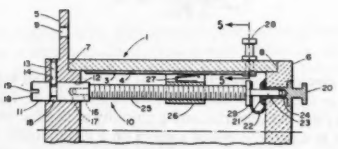
conducting paths thereon spaced from said insulator wall, a plurality of electrical contact elements of resilient electrically conducting material detachably mounted on said printed circuit board and electrically connected to the conducting paths thereon, and contact bridge means of electrically conducting material electrically connecting said contact elements to the electrical conducting paths on said insulator wall.

3,846,733

PLURAL POTENTIOMETER

Arthur B. Beetle, St. Petersburg, Fla., assignor to TRW Inc., Elk Grove Village, Ill.

Filed Oct. 19, 1973, Ser. No. 408,097
Int. Cl. H01c *9/02*
U.S. Cl. 338—133 **8 Claims**



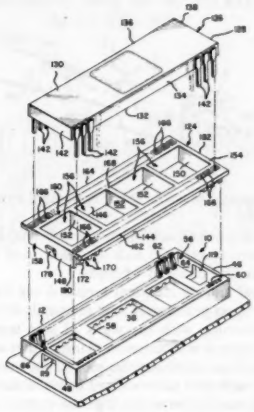
1. A multiple independently and infinitely variable potentiometer instrument comprising:
- an elongated housing having a closed curve cross section of dielectric material;
- a plurality of resistance elements axially disposed on the inner surface of the housing;
- first and second end plates secured to and closing the ends of the housing;
- a plurality of electrically conductive leadscrews each associated with one resistance element by having its ends rotatably mounted in the end plates and each leadscrew being spaced from its associated resistance element radially inward with respect to the axis of the housing, and parallel thereto;
- adjustment means at one end of each leadscrew enabling independent rotation thereof;
- means for electrically isolating the leadscrews from each other;
- a wiper nut on each leadscrew and having a wiper portion thereof in contact with its associated resistance element;
- a plurality of first terminal means each associated with at least one resistance element at one end thereof;
- a plurality of second terminal means each associated with at least one leadscrew.

3,846,734

FRAMES FOR ADAPTING A MULTI-CONTACT ELECTRICAL CONNECTOR TO ELECTRICALLY CONNECT WITH VARIOUS STYLES OF SUBSTRATES

William Vito Pauza, and Edward Michael Poltonavage, both of Palmyra, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 6, 1973, Ser. No. 330,158
Int. Cl. H01r *13/54*; H05k *1/02*
U.S. Cl. 339—17 CF **1 Claim**



1. In combination, a printed circuit board having an electrical circuit thereon, apertures in said board, a ceramic substrate having a plurality of electrical contacts exposed to one side of said substrate, said contacts on the substrate comprising electrical leads extending at an angle to the plane of the substrate, and a housing for connecting said substrate to said board, said housing comprising:
- a member having a pair of opposed parallel sides,
- electrically conductive spring members positioned in said parallel sides to accomodate the ceramic substrate and effect an electrical connection with the contacts,
- means on the spring members for electrically attaching them to the circuitry of a printed circuit board,
- and locking means to retain said substrate in electrically conductive relationship with said housing, said locking means comprising a frame with slots therein that receive the leads and wedge them against the spring members, and a detent on the frame that snaps into a slot in the housing.

3,846,735

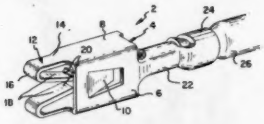
ELECTRICAL CONTACT TERMINAL WHICH CAN BE MATED WITH AN IDENTICAL TERMINAL OR WITH A DISSIMILAR TERMINAL

Clyde Thomas Carter, Shermansdale, and Homer Ernst Henschen, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 128,439, March 26, 1971, Pat. No. 3,732,525. This application May 4, 1973, Ser. No. 357,429
Int. Cl. H01r *13/12*
U.S. Cl. 339—47 **3 Claims**

1. An electrical terminal which is adapted to be disengageably coupled with an identical terminal or with a dissimilar terminal, said terminal comprising:
- a substantially flat web having sidewalls extending from the longitudinal edges thereof,
- means on said terminal at one end of said web for securing said terminal to an electrical conductor,

a pair of contact springs on said terminal at the other end thereof, each of said contact springs comprising an extension on one of said sidewalls, each of said springs projecting co-planarly from its respective sidewall and being reversely bent and extending reversely inwardly and between said sidewalls, said springs each having a width which is less than the width of said sidewalls and said springs extending centrally from the forward ends of said sidewalls so that the sides of said springs are spaced from the edges of said sidewalls are spaced from said web, the reversely extending end portions of said springs extending



convergently towards the longitudinal axis of said terminal and

a retention lance struck from said web, said lance extending obliquely from said web between said sidewalls, and towards said one end whereby,

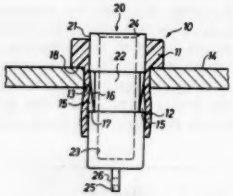
said terminal and an identical terminal can be engaged with each other upon positioning said terminals in opposed axially offset relationship with the webs of said terminal and said coplanar terminal in a common plane so that said terminal on said identical terminal can be moved into engagement with each other with one sidewall and one contact spring of each terminal extending between the two contact springs of the other terminal.

3,846,736

INSULATED ELECTRICAL CONDUCTOR FOR PANEL MOUNTING

Edwin Muz, Uhlandstrasse, Germany, assignor to Nicolay GmbH, Waiblingen, Germany

Filed Aug. 2, 1972, Ser. No. 277,268
Int. Cl. H01r *11/16*
U.S. Cl. 339—126 RS **1 Claim**



1. An electrical connector assembly for panel mounting, the connector being of the type having an electrically conductive connector member and an electrically nonconductive sleeve member which surrounds and electrically isolates the connector member from the panel, the improvement comprising the combination of

a sleeve member including a head portion having a surface for abutting the panel, and a tubular portion insertable through an opening in the panel,

said tubular portion having a radially expandable section axially spaced from said head portion a distance approximating the desired panel thickness, and

a connector member having a cylindrical outer surface, the outer diameter of at least part of said connector member being larger than the inner dimension of said radially expandable section so that insertion of said connector member causes said section to expand,

said sleeve member and said connector member being provided with means for retaining the assembly in assembled condition including

an annular recess in the outer surface of said connector member and

a plurality of radially inwardly extending projections disposed to engage said recess,

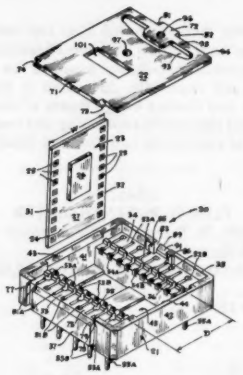
said recess and projection being disposed to engage when the members are assembled.

3,846,737

ELECTRICAL CONNECTOR UNIT FOR LEADLESS CIRCUIT DEVICE

Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 26, 1973, Ser. No. 335,479
Int. Cl. H01r *13/50*
U.S. Cl. 339—174 **16 Claims**



1. An electrical connector unit for supporting and for completing electrical connections to a leadless circuit device comprising a thin, flat substrate and a plurality of conductive pads arranged in a predetermined pattern on a substantially planar connection surface of that substrate, said connector unit comprising:

an insulator base having walls with upper edges defining an open-top receptacle for receiving and locating said circuit device in predetermined position extending across the top of the receptacle;

a plurality of individual resilient metal contact members mounted in said base, each of said contact members including a terminal element projecting outwardly of said base for connection to an external circuit and an active contact element projecting upwardly into said receptacle, the active contact elements of said contact members being arranged in a pattern providing for contact between said contact members and said conductive pads when said device is positioned in said receptacle;

an insulator cover for closing the top of said receptacle to enclose said device in said receptacle, said cover including two key projections extending outwardly of the opposed ends thereof, each key projection having an upwardly inclined positioning surface, said cover further having an elongated slot extending parallel to one edge of said cover closely adjacent one of said key projections to form, with said one key projection, a releasable latch;

and two keyways, formed in the upper edges of opposed walls of said base above the adjoining inserted device, for receiving said key projections, each keyway having an

upwardly inclined retaining surface complementary to and engageable with the positioning surface of one of said key projections;

said key projections including a given key projections with opposite ends and a second inclined surface to form two upwardly inclined converging positioning surfaces at said opposite ends and said keyway for said given key projection includes a second inclined surface to form two upwardly inclined converging retaining surfaces complementary to and engageable with the positioning surfaces of said given key projection;

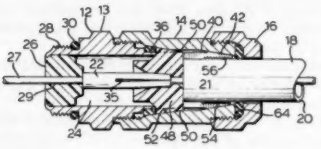
said resilient contact members biasing said device and said cover upwardly outwardly of said receptacle, when said connector unit is assembled with said circuit device inserted in said receptacle and said cover mounted on said base with said key projections extending into said keyways, to force the inclined positioning surfaces of said key projections into snug engagement with the inclined retaining surfaces of said keyways and thereby lock said cover and said device firmly in said base.

3,846,738

CABLE CONNECTOR

Zdenek Nepovim, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada

Filed Apr. 5, 1973, Ser. No. 348,242
Int. Cl. H01r *17/04*
U.S. Cl. 339—177 R **11 Claims**



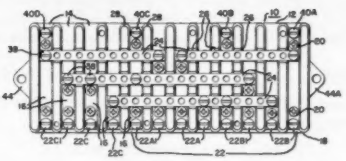
1. A connector for securement to the end of a coaxial cable having a sheath electrode and a core electrode which comprises: a hollow housing having a rearwardly extending and peripherally discontinuous electrically conductive tubular skirt for radially inward compression into gripping engagement and electrical contact with the sheath electrode of a coaxial cable extending forwardly into said skirt, said tubular skirt being formed with an external cam surface and at least one longitudinal slot; a radially inwardly compressible and electrically conductive collet sleeve mounted generally axially within said housing for receiving an exposed forward end portion of the core electrode of the coaxial cable inserted into said connector; a radially inwardly compressible and electrically insulating bushing generally coaxially disposed around said collet sleeve and having at least one projection extending through said slot formed in said tubular skirt, said projection defining an external cam surface; a hollow tubular cap having associated therewith at least one internal cam surface for conjoint axial movement with said cap and for engagement with said external cam surface of said tubular skirt and said external cam surface of said bushing projection when said cap is disposed coaxially around said tubular skirt whereby on forward axial movement of said cap relative to said housing, said cap is adapted to cause radially inward compression of said tubular skirt into gripping engagement and electrical contact with the sheath electrode of the coaxial cable disposed within said tubular skirt and adapted to cause radially inward compression of said bushing and said collet sleeve to move said collet sleeve into gripping engagement and electrical contact with the core electrode of the cable; said compression of the collet sleeve occurring concurrently with the compression of the tubular skirt for simultaneous gripping of the core electrode and sheath electrode without any torsional shearing action between the said electrodes; and co-operating means on said housing and on said cap for retaining said cap in a desired axial position on said housing.

3,846,739

TWO-OUT-OF-THREE LOGIC TERMINAL BOARD

Charles L. Devlin, Ballston Lake, and Markus A. Eggenberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 20, 1973, Ser. No. 371,824
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 V **5 Claims**



1. A terminal board for connecting first, second and third pairs of actuatable devices controlled respectively by first, second, and third monitoring devices into a two-out-of-three logic arrangement to apply power to an external load when at least two of said pairs of said actuatable devices are actuated comprising:

an electrically insulated base including first, second, and third sections, each of said sections having a plurality of substantially parallel channels formed therein, the sides of said channels forming insulative dividers;

a plurality of conducting strips, said strips being disposed one in each of said channels, each of said strips including at least one connecting terminal;

a plurality of bus bars arranged transversely to said conducting strips and disposed in slots formed in said dividers, wherein said bus bars are located in a plane spaced above said strips and spaced below the plane defined by the tips of the dividers formed by said channels; and

means for attaching said bus bars to said strips at selected points for interconnecting specified ones of said strips to effect a two-out-of-three logic arrangement of said actuatable devices.

3,846,740

MULTIPLE-PIN PLUG ADAPTOR

Neil F. Damon, Cumberland, R.I., assignor to Augat Inc., Attleboro, Mass.

Filed July 17, 1972, Ser. No. 272,694
Int. Cl. H01r *9/08*
U.S. Cl. 339—220 R **5 Claims**

1. An insulative adaptor for a multiple-pin plug having parallel rows of terminal pins, said adaptor comprising:

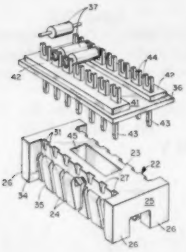
a generally flat rectangular body portion;

a pair of spaced parallel rows of upstanding posts projecting substantially perpendicularly from one side of said body portion and integral therewith, said posts being disposed along said side adjacent opposite parallel edges thereof;

a plurality of spaced shoulders projecting laterally beyond said parallel edges of said body portion and integral therewith, said shoulders being aligned with and substantially equal to the width of said posts, thereby forming a plurality of generally parallel slots between said shoulders; and

a pair of U-shaped end members integral with said body

portion and having legs substantially parallel with said posts, the sides of said end members extending laterally



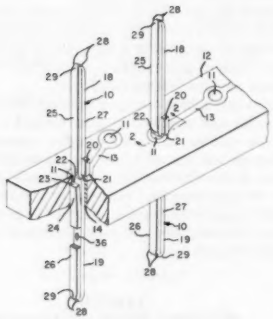
from said body portion parallel to and farther than said shoulders.

3,846,741

CIRCUIT BOARD POST TYPE TERMINAL

John Philip Kunkle, Harrisburg, and Ronald Bruce Barnes, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 25, 1973, Ser. No. 400,469
Int. Cl. H01r 9/08
U.S. Cl. 339—221 R **13 Claims**



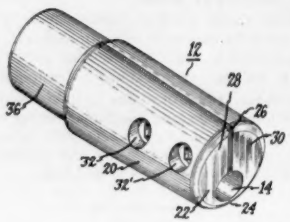
1. A terminal post inserted in a hole in a circuit board and comprising an electrically conductive metal strip having first and second ends and folded over onto itself at first and second fold points about the center portion of said metal strip so that the said first and second ends are facing and adjacent to each other but separated by a distance less than the thickness of said circuit board, and stop means affixed to said terminal post and constructed to seat upon the insertion side surface of said circuit board when said terminal post is fully inserted in said hole to position a given end of said metal strip within said hole, one of said ends of said metal strip being positioned and shaped to penetrate into the wall of said hole when said terminal post is fully inserted therein to provide good electrical and mechanical contact with said wall and to inhibit withdrawal of said terminal post from said hole.

3,846,742

QUICK DEMOUNTABLE LOAD TAP CHANGER TERMINAL

Robert H. Ettinger, Pittsfield, Mass., assignor to General Electric Company

Filed Aug. 2, 1973, Ser. No. 385,080
Int. Cl. H01r 7/08
U.S. Cl. 339—263 R **5 Claims**



1. A clamp-type electrical connector for connecting a cable to a male electrical terminal comprising:

a. an elongated metal cylinder having a longitudinal axis, and having a cylindrical end adapted to receive a cable;

b. said cylinder having a cylindrical opening at an end opposite from the cable end, said opening having a longitudinal axis that is generally parallel to and displaced a substantial distance from the longitudinal axis of said cylinder, said axis of said cable end being parallel to said axis of said cylindrical opening;

c. a longitudinally extending slot between said opening and the exterior of said cylinder dividing a region of said connector into two portions; and

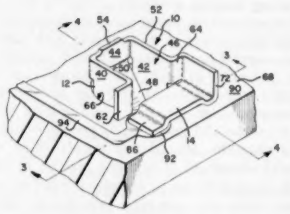
d. clamping means attached to and connected between said two portions of said cylinder for the purpose of bringing said two portions closer together thereby reducing the dimensions of said opening, and clamping said electrical connector to a mating male electrical terminal.

3,846,743

THROUGH-HOLE ELECTRICAL CONNECTOR FOR A CIRCUIT BOARD

William Joseph Garver, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 11, 1972, Ser. No. 314,061
Int. Cl. H05k 1/10
U.S. Cl. 339—275 B **6 Claims**



1. A through-hole electrical connector for flexibly interconnecting electrical circuitry on opposite sides of a circuit board, said connector comprising:

an elongated body disposable through a hole defined in said board, said body having forward and rearward opposing end portions and an intermediate portion therebetween,

said forward end portion being tapered inwardly toward the longitudinal axis of said body to facilitate insertion of said body through said hole and being disposable beyond one of said opposite sides of said board by insertion of said body through said hole to facilitate attachment of said forward end portion with the electrical cricuitry disposed on said one of said opposite sides of said board, said intermediate portion being disposable within said hole by insertion of said body through said hole, and said rearward end portion being disposable beyond the other of said opposite sides of said board by insertion of said body through said hole; and

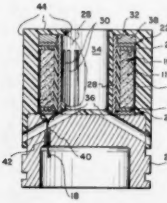
an elongated arm, said arm having an inner portion which is connected with said rearward end portion of said body and lies in a plane generally parallel to said axis of said body, a bendable outer portion which merges from said inner portion along an edge of said inner portion extending substantially perpendicular to the longitudinal axis of said body, said bendable outer portion extending from said inner portion in a substantially transverse relationship to both the longitudinal axis of said body and said inner portion, said bendable outer portion being disposable in a position overlying a surface portion of said other of said opposite sides of said board by insertion of said body through said hole, said bendable outer portion having a free end, said free end being disposable in a position overlying the portion of the electrical circuitry disposed on said other of said opposite sides of said board by insertion of said body through said hole to facilitate attachment of said rearward end portion via said arm with said other preselected area of electrical circuitry,

whereby said outer portion of said arm will bend to accommodate expansive and contractive changes in the thickness of said board due to varying environmental conditions imposed on said board while said free end of said outer portion of said arm maintains its attachment to said other preselected area of electrical circuitry and thereby provide a flexible link in the interconnection provided between said preselected areas of electrical circuitry by said connector.

3,846,744
SHOCK HARDENED TRANSDUCER

Nicholas Renna, Jr., Thousands Oaks; Theodore C. Madison, and Bernard A. Harvey, both of Santa Barbara, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1973, Ser. No. 361,117
Int. Cl. H04b *13/00*
U.S. Cl. 340—10 **7 Claims**



1. A shock hardened transducer for use as an underwater hydrophone comprising:

a tubular piezoelectric ceramic element;

an electrode deposited over each of the inner and outer cyclindrical surfaces of said ceramic element;

wrap means tightly encompassing the outer cylindrical surface of said ceramic element for producing a compressive hoop prestress;

mounting means contacting the ends of said ceramic element for producing a compressive axial prestress, including

a base having a tubular collar with an externally threaded end, and

a stress-nut engaging said threaded end;

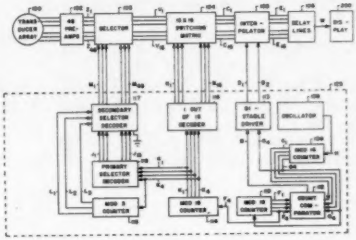
compliant rings interposed between said mounting means and each end of said ceramic element; and

potting compound completely surrounding said ceramic element.

3,846,745
ELECTRONIC SCANNING SWITCH

Eugene Emerson Hill, 1210 Caswell Cres., and Marvin Seymour Scrimshaw, 708 Sanfield Cres., both of Cornwall, Ontario, Canada

Continuation-in-part of Ser. No. 120,598, March 3, 1971, abandoned. This application June 7, 1973, Ser. No. 367,751
Claims priority, application Canada, Dec. 18, 1970, 101027
Int. Cl. G01s *7/54, 3/80*
U.S. Cl. 340—6 R **25 Claims**



1. An electronic interpolator means including a first input conductor adapted to carry a first input signal; a second input conductor adapted to carry a second input signal; an output conductor; electronic switching means connected to said first and second input conductors and to said output conductor; said switching means being adapted to connect said output conductor to said first input conductor and to said second input conductor, alternately; said switching means being adapted to provide an output signal in said output conductor which is an interpolation of said first input signal and said second input signal, said output signal consisting of alternate portions of said first input signal and said second input signal in selected proportions, means adapted to alter the proportions of said first and said second input signals carried by said output conductor to thereby alter the degree of interpolation of said first and said second input signals in said output signal.

3,846,746
PILOT WARNING INDICATOR SYSTEM

James H. Trageser, and Joseph A. Cali, both of Dayton, Ohio, assignors to Technology Incorporated, Dayton, Ohio

Division of Ser. No. 47,823, June 19, 1970, Pat. No. 3,736,559. This application Apr. 23, 1973, Ser. No. 353,348
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 R **19 Claims**

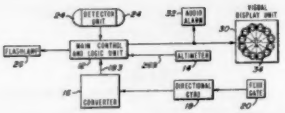
1. An indicator system for an aircraft comprising:

control and logic means,

flight condition responsive means joined to the control and logic means for providing signals thereto which have relationship to the flight condition of the aircraft,

flashlamp means joined to the control and logic means for providing spaced-apart pulses of light energy in which the time spacing of the pulses is in relationship to the flight condition of the aircraft,

detector means for sensing light energy, the detector means being joined to the control and logic means for providing pulse signals in accordance with pulses of light energy received by the detector means from another aircraft, alarm means joined to the control and logic means,



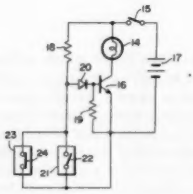
the control and logic means including means for comparing the flight condition of said other aircraft with the flight condition of the first said aircraft and for providing a signal to the alarm means if the possibility of a collision between said other aircraft and the first said aircraft exists.

3,846,747

DEVICE FOR DETECTING AND INDICATING QUANTITY OF ENGINE OIL

Hiroshi Arai; Jun Ohta, and Yasunobu Kikuchi, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 7, 1973, Ser. No. 422,766
Claims priority, application Japan, Aug. 11, 1973, 48-90378
Int. Cl. G08b *19/00*
U.S. Cl. 340—59 **9 Claims**



1. A device for detecting and indicating the quantity of engine oil in an oil pan of an engine for vehicles and the like comprising a detecting and indicating circuit including a indicate element and a switching transistor, an oil level stabilization detector for detecting stabilization of the engine oil level in the oil pan after starting of the engine, an oil level detector for detecting lowering of the engine oil level to a level lower than a predetermined level, and means for connecting the outputs of said oil level stabilization detector and said oil level detector to said detecting and indicating circuit, whereby said switching transistor is turned on to energize said indicate element when the outputs of both said detectors are simultaneously applied to said detecting and indicating circuit.

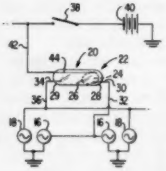
3,846,748

SIGNALING SYSTEM AND SENSOR

Charles E. Hopwood, 1319 S. Michigan Ave., Clearwater, Fla. 33516

Filed Mar. 23, 1973, Ser. No. 344,196
Int. Cl. B60q *1/26;* **H01h** *35/02*
U.S. Cl. 340—71 **4 Claims**

1. In a signal system for a vehicle, a sensor unit for actuating a signal responsive to movement of the vehicle, the sensor unit comprising, a body adapted to be operatively fixed to the vehicle, said body having a fulcrum part, a sensor including a container and a pair of spaced apart contacts for connection in circuit between a source of electrical power and the signal, and a mass of fluid movable in the container between a normal position out of circuit with at least one of the contacts and, responsive to a change of velocity of the vehicle a position in



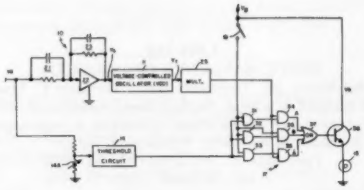
circuit with the contacts, for actuating the signal, a rigid block encasing said container and having a fulcrum part cooperating with the body fulcrum part, conductors, one connected with each of the contacts, and extending outwardly from the block, for connection in said circuit with the signal, and adjusting means mounted on the body and engaging the block for adjusting the disposition of the block and leveling the sensor after installation on the vehicle.

3,846,749

VEHICLE BRAKE LIGHT CONTROL SYSTEM

Renwick E. Curry, Hingham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 1, 1973, Ser. No. 328,798
Int. Cl. B60q *1/44*
U.S. Cl. 340—72 **12 Claims**



1. A vehicle brake light control system comprising

means for producing a voltage representative of the deceleration of a vehicle;

means responsive to said deceleration voltage for producing a pulsed signal having pulse repetition rate dependent on the sum of said deceleration voltage and the derivative thereof;

threshold means responsive to said deceleration voltage for producing a threshold signal when said deceleration voltage exceeds a predetermined threshold level;

means for producing a braking signal when the brakes of said vehicle are applied;

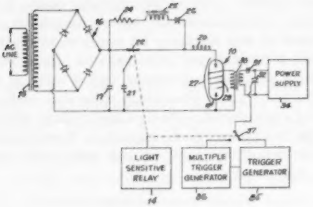
brake signal actuation circuit means responsive to said pulsed signal, said threshold signal and said braking signal for flashing on the brake light system of said vehicle at a rate dependent on the repetition rate of said pulsed signal when said vehicle is in a first state wherein it is decelerating without the application of said vehicle brakes, for turning on said brake light system when said vehicle is in a second state wherein said brakes are applied and said vehicle is decelerating at a level below said threshold

level, and for flashing off said brake light system at a rate dependent on the repetition rate of said pulsed signal when said vehicle is in a third state wherein said brakes are applied and the vehicle is decelerating at a level which exceeds said threshold level.

3,846,750
DAY-NIGHT FLASH BEACON

Wayne A. Kearsley, Chelmsford, Mass., assignor to Flash Technology Corporation of America, Nashua, N.H.

Filed July 27, 1972, Ser. No. 275,720
Int. Cl. H05b *41/32*
U.S. Cl. 340—105 **5 Claims**



1. A flash beacon for providing high power daytime flashes and relatively lower power nighttime flashes comprising:

a. A dual-mode capacitive discharge power supply having selectable large and small discharge capacities;

b. A gaseous discharge flashlamp connected to said power supply;

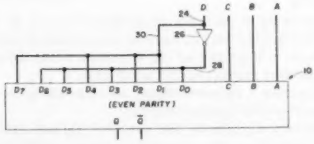
c. A dual-mode trigger circuit having selectable single repetitive trigger generator and group repetitive trigger generator connected to said flashlamp for providing ionizing trigger pulses; and,

d. An automatic switch connected to said dual-mode capacitive discharge power supply and said dual-mode trigger circuit for operating to select said small discharge capacity and said group repetitive trigger generator at night.

3,846,751
FOUR-BIT PARITY CHECKER/GENERATOR

Anthony Prieto, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed June 12, 1973, Ser. No. 369,166
Int. Cl. G06f *11/10*
U.S. Cl. 340—146.1 AG **11 Claims**



1. A four bit parity checker comprising:

a. an eight bit data selector/multiplexer integrated circuit having three input address terminals, eight data input terminals and at least one Q output terminal and including means to connect said eight data terminals into two sets of four each, a first set comprising terminals D_1, D_2, D_4, D_7 and the second set comprising terminals D_0, D_3, D_5, D_6;

b. means to connect three data circuits to said three input address terminals;

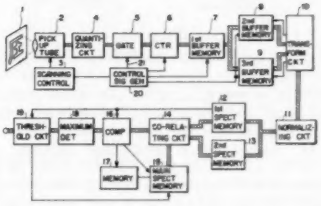
c. means to connect a fourth data circuit to one of the said two sets of data input terminals; and

d. means also to connect said fourth data circuit through inverter means to the other of said two sets of data terminals.

3,846,752
CHARACTER RECOGNITION APPARATUS

Yasuaki Nakano, Hino; Kazuo Nakata, Kokubunji, and Yuriko Uchikura, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1972, Ser. No. 294,179
Int. Cl. G06k *9/02*
U.S. Cl. 340—146.3 Q **6 Claims**



1. Character recognition apparatus which comprises

a. means to obtain a peripheral distribution pattern of an unknown input character by projecting the density distribution of said character on at least one axis,

b. means to obtain an amplitude spectrum pattern of said peripheral distribution pattern,

c. memory means for storing a number of standard amplitude spectrum patterns corresponding to a number of standard characters,

d. comparator means for comparing said standard spectrum patterns stored in said memory means and said amplitude spectrum pattern of said unknown input character and providing a correlation value between both the patterns, and

e. output circuit means for deriving as the unknown input pattern the standard character corresponding to the standard amplitude spectrum pattern which attains the maximum one of a number of correlation values obtained by said comparator means.

3,846,753
AUTOMATIC ADDRESS DETECTION SYSTEM

Arie Adriaan Spanjersberg, Leiderdorp, Netherlands, assignor to De Staat Der Nederlanden, Ten Deze Vertegenwoordigd Door De Directeur-Generaal Der Posterijen, Telegrafie, Hague, Netherlands

Filed Sept. 20, 1972, Ser. No. 290,717
Claims priority, application Netherlands, Sept. 23, 1971, 7113082
Int. Cl. G06k *9/16*
U.S. Cl. 340—146.3 D **9 Claims**

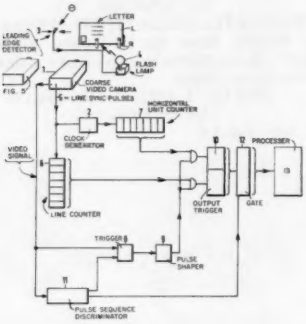
1. An apparatus for locating and recognizing a coded address on documents comprising:

a. a video camera having a coarse raster scanning means for viewing said documents,

b. an image dissector tube having a fine raster scanning means for viewing said documents, said tube being spaced from said camera along a path for said documents,

c. means for moving said documents successively passed said camera and said tube at a constant continuous rate,

d. means connected to said camera for determing the location of the coded address on said documents, comprising a pulse sequence discriminator means for determining the presence of the coded address, and separate counter means for determining the horizontal and vertical distances of said address from the edges of said documents, and



e. means for controlling said tube for scanning only the location determined by said location determining means for only viewing said address by said tube for reading the code of said addresss, comprising a digital to analogue convertor means for producing a direct current for vertically positioning the location of said address to be scanned by said tube in accordance with one of said separate counter means, and a sawtooth wave generator for horizontally positioning the location of said address in accordance with the other of said separate counter means.

3,846,754

PATTERN PRE-PROCESSING APPARATUS

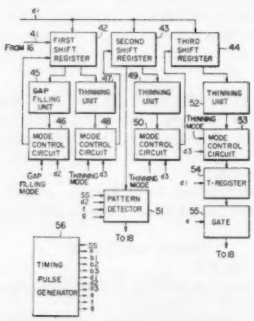
Mitsunori Oka, Hachioji, and Michio Yasuda, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,662

Claims priority, application Japan, Apr. 7, 1972, 47-34375

Int. Cl. G06k *9/02*

U.S. Cl. 340—146.3 H **6 Claims**



1. In a pattern recognition system, a pattern pre-processing apparatus for modifying a quantized input pattern obtained by the scanning of a pattern, by the conversion into a first digital value of a signal produced in the case of said scanning of a pattern area, and by the conversion into a second digital value of a signal produced in the case of said scanning of a background area, said pattern pre-processing apparatus comprising:

at least one shift register for storing and shifting therein said input pattern in the order in which it has been scanned, and

pattern thinning means for receiving, on the basis of a first prespecified bit position of said shift register, the bit contents in accordance with said input pattern of said shift register corresponding to selected bit positions located adjacent to said first prespecified bit position, including means for producing a signal of said second digital value when the contents of said adjoining bit positions indicate any one of predetermined patterns, and for producing a signal indicating as before the content of said first prespecified bit position when the contents of said adjoining bit positions indicate none of said predetermined patterns, said pattern thinning means including a plurality of circuit means for examining whether said contents of said adjoining bit positions indicate any one of said predetermined patterns, said circuit means producing a signal of said second digital value as an output of said pattern pre-processing apparatus when the content of a peripheral portion of said pattern area is shifted to said first prespecified bit position, thereby leaving only a skeletal portion of said pattern area in the state of said first digital value.

3,846,755

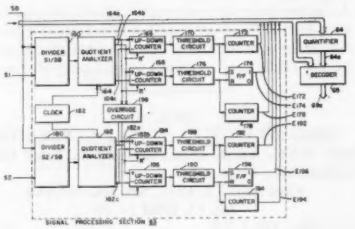
PATTERN RECOGNITION SYSTEM

William H. Hart, Arlington, Mass., assignor to Electronic Reading Systems, Watertown, Mass.

Continuation-in-part of Ser. No. 93,378, Nov. 27, 1970, which is a continuation-in-part of Ser. No. 885,044, Dec. 15, 1969, abandoned. This application Aug. 6, 1973, Ser. No. 385,713

Int. Cl. G06k *9/13*

U.S. Cl. 340—146.3 AC **23 Claims**



1. A method of identifying an unknown pattern comprising the steps of:

A. measuring a plurality of moments about at least one predetermined axis in each of successive portions of the pattern, at least two of the moments being different moments with respect to the same axis,

B. generating a moment signal corresponding to the value of each of the measurements,

C. selecting certain of the moment signals indicative of predetermined characteristics of the pattern in sections thereof less than the entire pattern,

D. generating a plurality of comparison parameter signals including comparison parameter signals for the sections, at least one of the comparison parameter signals for a section being generated by taking a ratio of said moment signals, at least one moment signal for that ratio being a preselected moment signal for that section, and

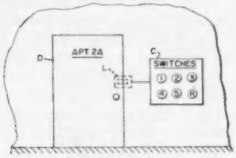
E. comparing the values of the comparison parameter signals with corresponding values of reference patterns to identify the unknown pattern.

3,846,756

PROGRAMMABLE SEQUENTIAL LOGIC CIRCUIT

Lawrence S. Schmitz, Plumboro, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1973, Ser. No. 373,345
Int. Cl. H04q 5/00
U.S. Cl. 340—147 MD 5 Claims



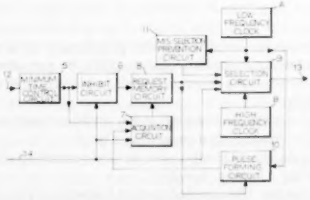
1. A sequential logic circuit comprising logic memory means having a plurality of inputs and outputs and including a stored program including a plurality of locations each including stored word consisting of one or more bits, digital input means connected to said inputs of said logic memory means to provide sequential entry of digital signals at said inputs, the sequential application of digital signals to said inputs of said logic memory means developing an input address comprised of a number of bits corresponding to the number of bits of said stored words, said logic memory means adapted to respond to said digital signals applied to said inputs by sequencing through one or more locations of said stored program to a location wherein the stored word exhibits a digital value equivalent to the digital value of the input address, the sequencing of an input address from one location to another causing the change of only one bit of said input address, the presence of a stored word having a digital value corresponding to the digital value of the input address causing said logic memory means to develop a digital output signal indicative thereof, and feedback means for directly connecting one or more of said outputs of said logic memory means to one or more of said inputs to apply said digital output signal to the input of said logic memory means that entered said digital signal to latch said digital signal at said input in a stable state.

3,846,757

EQUAL PROBABILITY SELECTION CIRCUIT

David Warren Friedman, No. 30-152 chome Kakinokizaka, Meguro-ku, Tokyo, Japan

Filed Aug. 9, 1973, Ser. No. 387,195
Claims priority, application Japan, Nov. 29, 1972, 47-119498
Int. Cl. H04q 3/00
U.S. Cl. 340—166 R 15 Claims



1. An equal probability selection circuit allowing the selection of any one of N unique selection intersections with equal probability and comprising:

a selection start switch means;

clock circuit means, driven by said selection start switch, and having a low frequency output and a high frequency output;

counter circuit means, driven by the output of the clock circuit means, and having two sets of outputs;

a switch matrix, comprising N switches each switch comprising a selection intersection; each switch having two terminals, one terminal of each switch being connected to an output from one of the two sets of outputs of the counter circuit; the other terminal of each switch being connected to an output from the other of the two sets of outputs of the counter circuits; and

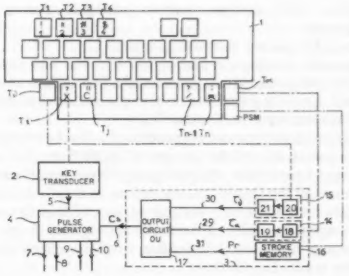
feedback circuit means receiving an output from said matrix when a selection intersection has been selected and providing, at that time, an output to the clock circuit to inhibit the high frequency output of the clock circuit.

3,846,758

ELECTRONIC KEYBOARD INCLUDING PROGRAM MEMORY MEANS AND PROGRAM SELECTING MEANS

Cyrille Gosset, Danjoutin, France, assignor to Societe Industrielle Honeywell Bull. (Societe Anonyme), Paris, France

Filed June 28, 1972, Ser. No. 266,894
Claims priority, application France, June 30, 1971, 71.23931
Int. Cl. B41j 25/24
U.S. Cl. 340—172.5 12 Claims

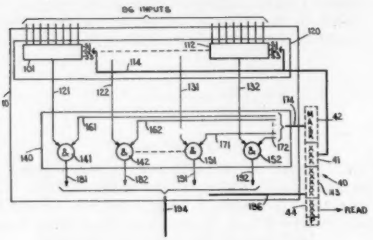


1. An electronic keyboard, comprising a plurality of character keys, each associated with a lower case character and an upper case character; character key circuit means for each character key for providing a key signal when a corresponding character key is actuated; a lower case selector key; lower case circuit means for providing a binary signal τ_a of a first level when said lower case selector key is actuated and of a second level when said lower case selector key is not actuated; an upper case character selector key; upper case circuit means for providing a binary signal τ_a of said first level when said upper case selector key is actuated and of said second level when said upper case selector key is not actuated; automatic control means providing a signal P_r as a string of binary signals having either said first level or said second level; means for actuating said automatic control means; and output selector circuit means for selecting said lower case character associated with said actuated character key when said signal P_r is at said second level, said signal τ_a is at said second level, and said signal τ_a is at said second level, and for selecting said upper case character associated with said actuated character key when said signal P_r is at said first level, said signal τ_a is at said second level, and said signal $\tau\alpha$ is at said second level.

3,846,759
DATA PROCESSING ARRANGEMENTS

John Alfred Drake; Alan James Payne, both of Biggleswade, and Andrew Ronald Reichert, Stevenage, all of England, assignors to International Computer Limited, London, England

Filed July 24, 1972, Ser. No. 274,703
Claims priority, application Great Britain, July 23, 1971, 34604/71
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **2 Claims**



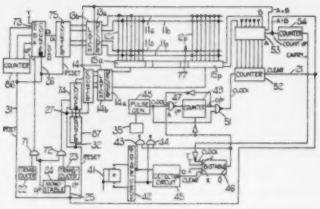
1. In a data processing system in which items of data are required to be applied through peripheral data handling units, at least one peripheral unit function control device including:
groups of input lines arranged to carry input information;
groups of output lines;
control word storage registers arranged in at least two groups;
means for storing instruction words;
means for reading out instruction words in succession from the instruction storing means, the instruction words read out specifying functional linkages required to be set up between input and output lines;
means responsive to a first portion of a first instruction word to select one of the groups of input lines and to mask input lines of the selected group to render effective only some of the lines of that group to pass information;
means responsive to a second portion of said first instruction word to select a word storage register in one of said groups to receive information from the effective ones of the masked input lines;
control means responsive to the second and a third portion of a following instruction word to read the received information from the selected word storage register and to read out other information from a word storage register of a different group and to combine logically said contents of the word registers read out to produce a resultant multi-digit output control word; and
means responsive to the output control word to energise with an output signal pattern a plurality of selected ones of the output line groups, the energisation pattern being related to the digits of the output control word.

3,846,760
ENGINE CONTROL SYSTEMS

John Michael Ironside, Birmingham, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Continuation-in-part of Ser. Nos. 220,657, Jan. 25, 1972, and Ser. No. 220,658, Jan. 25, 1972, and Ser. No. 220,659, Jan. 25, 1972. This application Mar. 6, 1973, Ser. No. 338,576
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 **11 Claims**

1. An engine control system for an engine in which an operating function of the engine is controlled by the length of an electric pulse applied to the engine, comprising in combination a first transducer producing a first signal representative of a first engine parameter, a second transducer producing a second signal representative of another engine parameter, a programmed logic circuit means, to which said signals are fed, said logic circuit means producing an output dependent on the values of said first and second signals, a controllable output circuit means for normally producing an output pulse having a predetermined length in the absence of an output signal

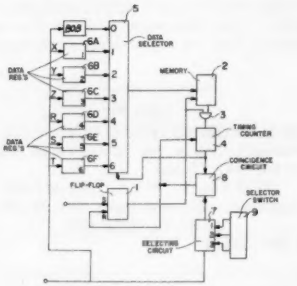


from said logic circuit means, said output pulse controlling said operating function of the engine, means controlled by the engine for initiating each output pulse, and means coupling said logic circuit means to the output stage, such that the length of said output pulse is increased in accordance with and upon the occurrence of said output signal from said logic circuit means.

3,846,761
POSITIONING CONTROLLING APPARATUS

Shigeru Matsuoka, Toyama, and Shigeru Mori, Nakaniikawa-gun, both of Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama-shi, Toyama-ken, Japan

Filed June 21, 1973, Ser. No. 371,953
Claims priority, application Japan, July 13, 1972, 47-70276
Int. Cl. G06f *15/50*; **G05b** *19/00*
U.S. Cl. 340—172.5 **10 Claims**



1. Apparatus for controlling the positioning of a moving machine including a plurality of drive axes, by providing variable length positioning information data blocks, said apparatus comprising:
a flip-flop circuit (**1**) coupled to be set by a sampling input signal for producing a recording signal;
a memory device (**2**) responsive to said recording signal for generating a timing signal;
a timing counter (**4**) coupled to said memory device (**2**) and to said flip-flop circuit (**1**) and operative in response to the presence of said recording signal and said timing signal;
a plurality of data registers (**6A-6F**) for storing positioning data words of said machine, said data words collectively defining a block of data;

a data selector (5) coupled to said timing counter (4), to said memory device (2) and to said data registers (6A-6F) for selecting a block commencement code (BOB) and writing said code into said memory device (2) when the count of said timing counter (4) assumes a predetermined value;

said timing counter (4) successively selecting one of said data registers (6A–6F) via said data selector (5) to write the data stored in said selected data register into said memory device (2) each time said timing counter (4) increases its count;

a block length selecting circuit (7) for selecting the total number of said data words which are to comprise a given block of data, said block length selecting circuit (7) selecting one of said data registers which has stored therein the information word corresponding to the last position information data which comprises said given block of data, said given block of data thereby comprising the data words stored in said data registers successively selected by said data selector (5) up to and including the data register selected by said block length selecting circuit (7); and

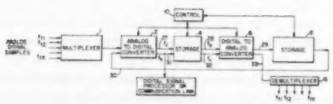
a coincidence circuit (8) for comparing the output of said block length selecting circuit (7) with the count of said counter (4) and for resetting said flip-flop circuit (1) and said timing counter (4) upon detection of coincidence between the outputs of said timing counter (4) and said block length selecting circuit (7);

whereby only the information which has been stored in said successively selected data registers up to and including the data register selected by said block length selecting circuit (7), which information corresponds to said given block of data, is selectively stored in said memory device (2).

3,846,762
APPARATUS FOR OPTIMAL DATA STORAGE

John G. Gregory, White Marsh, and Robert M. Trepp, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1973, Ser. No. 387,417
Int. Cl. G06f *3/05*
U.S. Cl. 340—172.5 **10 Claims**



1. Apparatus for the storage of data from an input source of analog signal samples comprising:

a control means;

a first storage means for storing digital signals;

an analog to digital converter adapted to receive said analog signal samples and to convert said analog signals to digital signals, said analog to digital converter being responsive to said control means to write said converted digital signals into said first storage means at a first digital word rate f_i;

digital to analog converter means responsive to said control circuit to read said digital signals out of said first storage means at a second digital word rate f_s and to convert said digital signals back into output analog signals having a particular analog bandwidth;

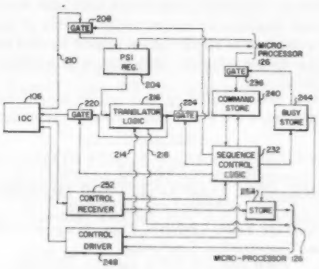
second storage means responsive to said control circuit to record the output analog signals of said digital to analog converter, said second digital word rate f_s being chosen in accordance with the maximum information storage bandwidth of said second storage means whereby said particular analog bandwidth of said converted output analog signals will be substantially equal to the maximum information storage bandwidth of said second storage means; and

means to process the recorded signals of said second storage means to thereby reconstitute the input analog signal samples.

3,846,763
METHOD AND APPARATUS FOR AUTOMATIC SELECTION OF TRANSLATORS IN A DATA PROCESSING SYSTEM

Douglas L. Rilkonen, Billerica, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 4, 1974, Ser. No. 430,838
Int. Cl. G06f *3/00, 5/00*
U.S. Cl. 340—172.5 **15 Claims**



1. In a data processing system which includes a central processing unit and at least one peripheral device, a peripheral control unit for transferring encoded data between the central processing unit and the peripheral device and including a plurality of translators, each responsive to an enabling signal for translating encoded data applied thereto from one code to another and each including means for storing a translator code word which identifies and distinguishes said each translator from the other translators, output lines, and means responsive to said enabling signal for applying the translator code word stored in said each translator to the translator output lines, means for successively supplying identification code words, at least some of which correspond to the translator code words, means for storing said identification code words, means for applying said enabling signal to successive ones of said translators, and means for comparing the identification code word stored in said storing means with each translator code word applied to the output lines, for causing said enabling signal applying means to apply said enabling signal to a next successive one of said translators upon the occurrence of a mismatch, and for causing the enabling signal applying means to maintain application of said enabling signal to a selected translator when the translator code word of the selected translator matches the identification code word stored in the register.

3,846,764
TECHNIQUE FOR INFORMATION STORAGE USING ANISOTROPIC COLOR CENTERS IN ALKALI HALIDE CRYSTALS

Irwin Schneider, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

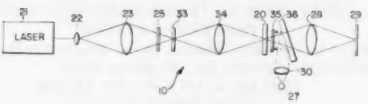
Filed May 18, 1973, Ser. No. 361,700
Int. Cl. G11c *11/42, 13/04*
U.S. Cl. 340—173 LS **11 Claims**

1. An information storage and display system comprising:

an optical material having anisotropic centers capable of being aligned in a common direction;

first illuminating means consisting essentially of incoherent polarized radiation operatively associated with said material, said illuminating means being capable of aligning said color centers at one polarity as well as reorienting said color centers at a second polarity;

second illuminating means including coherent polarized



radiation operatively associated with said material, said second illuminating means being capable of suppressing the color center reorientation caused by said first illuminating means whereby information is written into said material; and

detection means including said second illuminating means to determine the information state of the material.

3,846,765

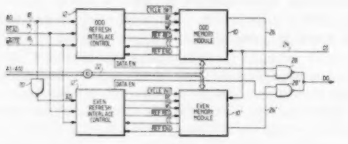
DYNAMIC CELL SEMICONDUCTOR MEMORY WITH INTERLACE REFRESH

Robert Gale De Vries, Littleton, Colo., assignor to Monolithic Systems Corporation, Englewood, Colo.

Filed Feb. 14, 1973, Ser. No. 332,296

Int. Cl. G11c *11/40, 11/24*

U.S. Cl. 340—173 DR **10 Claims**



1. A memory system comprising:

first and second memory modules each having a plurality of addressable storage locations for dynamically storing data signals as trapped charges, said charges requiring refreshing at intervals of time,

means for applying addressing signals to each of said memory modules;

first and second memory cycle control means for sequencing said first and second memory modules, respectively, through a read or write cycle in response to a cycle initiate signal or through a refresh cycle in response to a refresh request signal;

first and second interlace control circuits for producing said refresh request signals and said cycle initiate signals;

means for applying to each of said interlace control circuits an address signal indicating which memory module contains the storage locations being addressed; and,

means for applying to each of said interlace control circuits a signal indicating whether a read or write operation is to be performed at the addressed storage location,

said first interlace control circuit including,

first means responsive said read and write operation signals and said address signal for producing and applying a refresh request signal to said first memory cycle control means when said address signal indicates the addressed storage location is not in said first memory module, and

second means responsive to said read and write operation signals and said address signal for applying a cycle initiate signal to said first memory cycle control means when said address signal indicates the addressed storage location is in said first memory module;

said second interlace control circuit including,

first means responsive to said read and write operation signals and said address signal for producing and applying a refresh request signal to said second memory cycle control means when said address signal indicates the addressed storage location is not in said second memory module, and

second means responsive to said read and write operation signals and said address signal for applying a cycle initiate signal to said second memory cycle control means when said address signal indicates the addressed storage location is in said second memory module.

3,846,766

ASSOCIATIVE MEMORIES INCLUDING MOS TRANSISTORS

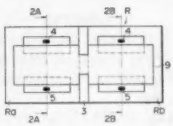
Isao Nojima; Keikichi Tamaru, and Tai Sato, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of Ser. No. 237,455, March 23, 1972. This application Aug. 30, 1973, Ser. No. 393,037

Claims priority, application Japan, Mar. 25, 1971, 46-16834

Int. Cl. H01r *13/50*

U.S. Cl. 340—173 AM **5 Claims**



1. An associative memory comprising one bit memory cell including:

a pair of MIOS transistors each having a source electrode, a drain electrode, and a gate electrode including double insulating layers and presenting threshold voltage-hysteresis characteristics;

a word line connected commonly to the gate electrodes of said pair of MIOS transistors;

a pair of digit lines connected respectively to the drain electrodes of said pair of MIOS transistors;

a read-out line connected commonly to the source electrodes of said pair of MIOS transisotrs;

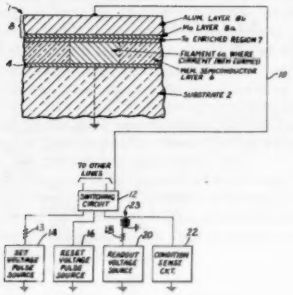
writing means for writing a binary signal, including means for selectively impressing voltages of different levels respectively on said pair of digit lines according to the content of said binary signal and for selectively impressing at the same time on said word line a negative or positive polarity voltage of a level high enough to vary the hysteresis characteristics of said pair of MIOS transistors also according to the content of said binary signal; and

interrogation means for detecting an output from said read-out line, including means for selectively impressing voltages of different levels respectively on said pair of digit lines according to the content of a binary signal to be interrogated and for impressing at the same time on said word line a voltage of intermediate value between the threshold voltages presented by said hysteresis characteristics varied by said writing means.

3,846,767
METHOD AND MEANS FOR RESETTING FILAMENT-FORMING MEMORY SEMICONDUCTOR DEVICE

Morrel H. Cohen, Chicago, Ill., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 24, 1973, Ser. No. 409,135
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R **9 Claims**



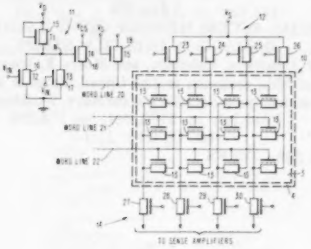
1. A method of resetting a filament-type memory device including spaced electrodes between which extend a body of generally amorphous substantially non-conductive memory semiconductor material which, when a set voltage pulse in excess of a given threshold voltage value and duration is applied to said electrodes, has formed therein a crystalline low resistance filamentous path resettable into a generally amorphous condition by application of one or more reset voltage pulses producing reset current pulses through said filamentous path which heat the same to a temperature which dissipates the crystalline filament and are of a duration which is so short that upon termination of each reset current pulse the filamentous path will be quickly quenched to leave at least portions of the filamentous path in a substantially amorphous condition, said method comprising: first applying to said electrodes one or more reset voltage pulses which produce a reset current pulse or pulses which substantially completely convert the crystalline filamentous path to a substantially amorphous filamentous path where the memory device has its maximum resistance and threshold voltage value, and then applying to said electrodes one or more additional reset voltage pulses each in excess of the maximum threshold voltage value of the memory device which additional voltage pulses cause an additional reset current pulse or pulses to flow through the high resistance filamentous path to homogenize the same and prevent crystallization from developing therein due to high ambient temperature storage of the memory device.

3,846,768
FIXED THRESHOLD VARIABLE THRESHOLD STORAGE DEVICE FOR USE IN A SEMICONDUCTOR STORAGE ARRAY

Paul J. Krick, Crugers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,406
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **25 Claims**

1. A composite information storage device comprising:
a semiconductor substrate of one conductivity type;
a pair of regions of opposite conductivity type disposed in said substrate defining a channel region therebetween;
a variable threshold device which includes a first portion of said channel region; and,

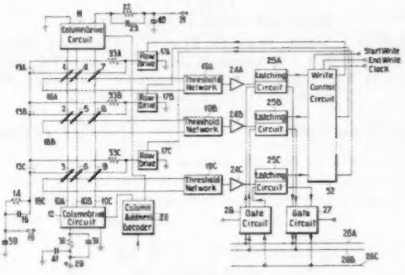


at least a fixed threshold device which includes a portion of said channel region different from said first portion.

3,846,769
MAGNETIC DATA STORAGE ARRANGEMENT HAVING SEQUENTIAL ADDRESSING OF ROWS

Graham Shepherd, Maidstone, England, assignor to Elliott Brothers (London) Limited, New Street, Chelmsford, England

Filed Jan. 12, 1973, Ser. No. 323,090
Claims priority, application Great Britain, Jan. 14, 1972, 1968/72
Int. Cl. G11c *7/00, 11/06*
U.S. Cl. 340—174 M **4 Claims**



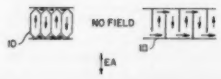
1. A magnetic data storage arrangement comprising: a plurality of current operated bistable magnetic elements arranged in rows and columns; a set of column conductors each of which is inductively coupled with a respective column of said magnetic elements; a set of row conductors each of which is inductively coupled with a respective row of said magnetic elements; write means comprising first drive means for applying a first current of predetermined value to any selected column conductor, and second drive means for applying a second current of predetermined value to each in turn of any desired selection of row conductors whereby simultaneous first and second said currents can be applied in turn to a desired selection of elements in a selected column, thereby to operate said desired selection of elements into their second stable magnetic state and store a data word in said selected column; impedance means incorporated in said second drive means for defining the value of said second current for each row conductor, at least two row conductors sharing the same current defining impedance means; and read means for sens-

ing the stable states of all the elements in any selected column, thereby to read out the stored data word in that selected column.

3,846,770
SERIAL ACCESS MEMORY USING MAGNETIC DOMAINS IN THIN FILM STRIPS

Leonard J. Schwee, Colesville, and Henry R. Irons, Adelphi, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 11, 1973, Ser. No. 378,296
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 FB **4 Claims**

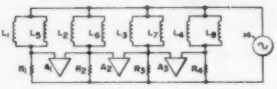


1. A magnetic storage system comprising:
a polycrystalline thin film strip approximately 25 μm wide;
means for placing reversal domains on said strip;
an easy axis field applied along the width of strip whereby several reversal domains collapse enabling the remaining reversal domains to be stable;
means producing a field for propagating said reversal domains along the hard axis; and
conductor means for sensing said reversal domains on said strip.

3,846,771
POSITION INDICATION SYSTEM

Frederick J. Young, Swissvale; Francis T. Thompson, Murrysville, and Dirk J. Boomgaard, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,776
Int. Cl. G08c *19/06*
U.S. Cl. 340—195 **11 Claims**



1. A position indication system for detecting the location of an elongated, longitudinally movable, metallic member having one degree of freedom along an axis corresponding to its longitudinal dimension comprising:
a plurality of discrete electrical coils wound around the circumferential periphery of the axis of movement of the movable member and arranged in tandem longitudinally therealong;
an alternating current source electrically coupled to each of said plurality of coils; and
means for respectively detecting a change in impedance within each of said plurality of coils as the movable member moves along its axis of movement, said detection means providing discrete outputs indicative of the location of the movable member relative to said tandem arrangement of discrete coils.

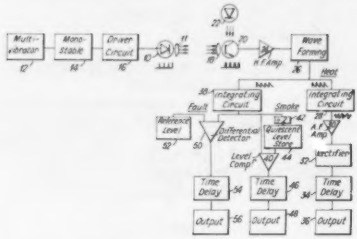
ERRATUM

For Class 340—199 see:
Patent No. 3,846,804

3,846,772
FIRE DETECTOR RESPONSIVE TO AMPLITUDE MODULATION OF A PULSED EM BEAM

William T. Peberdy, Thatcham, England, assignor to Chubb Fire Security Limited, Middlesex, England

Filed Aug. 6, 1973, Ser. No. 385,708
Claims priority, application Great Britain, Aug. 11, 1972, 37633/72
Int. Cl. G08b *17/10, 17/12*
U.S. Cl. 340—227 R **9 Claims**

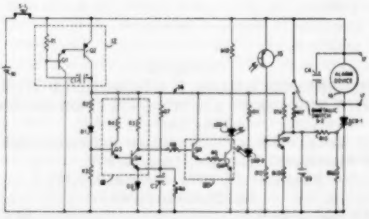


1. Fire-detecting apparatus comprising: a source of radiation including a solid-state emitter emitting a beam of radiation in a series of pulses; radiation-receiving means positioned to receive radiation which has passed through an intervening gaseous medium from the said source and including a device sensitive to the received radiation to produce a corresponding electric signal, the beam of radiation, where incident on the radiation-receiving means, overlapping the radiation-receiving means around the whole of its perimeter; a frequency-selective circuit for selecting from the output of the radiation-sensitive device a pulse signal resulting from the pulses of radiation from the said source; and an alarm circuit connected to receive this pulse signal and responsive to an amplitude modulation thereof indicative of the effect of a fire on the said intervening gaseous medium.

3,846,773
BATTERY OPERATED SURVEILLANCE DEVICE

Willy Lintelmann, Ayeres Point Rd., Old Saybrook, Conn. 06475, and Peter J. Frey, 1560 Asylum Ave., West Hartford, Conn. 06117

Filed Aug. 18, 1972, Ser. No. 281,947
Int. Cl. G08b *19/00, 17/10*
U.S. Cl. 340—237.5 **3 Claims**



1. A condition responsive alarm device for generating a warning signal upon the occurrence of a preselected degree of smoke density including:

continuously running oscillator means for generating timing pulses;

first light emitting means connected to receive said oscillator means timing pulses and to emit light pulses in accordance with said timing pulses;

light responsive means positioned to receive light pulses from said first light emitting means and to generate electrical signals commensurate in magnitude with the intensity of the received light signals pulses;

normally open switch means;

control means connected to said switch means and connected to receive said timing signals and said electric signals from said first light responsive means, said control means maintaining said switch means in the normally open condition in response to substantially simultaneous receipt of one of said timing signals and an electric signal of at least a preselected magnitude from said light responsive means, said control means activating said switch means to the closed condition upon substantially simultaneous receipt of a timing signal and an electric signal from said light responsive means having a magnitude less than said preselected magnitude; and

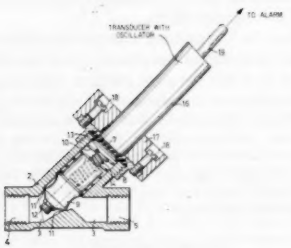
alarm means connected to said switch means, said alarm means being energized upon the activation of said switch means to the closed condition commensurate with the partial obscuration of the light responsive means by a preselected smoke density.

3,846,774

FLOW AND DIFFERENTIAL PRESSURE MONITOR

Hugo Adiel Thorbard, Huddinge, and Bjorn Anders Thorbard, Hagersten, both of Sweden, assignors to Elektriske AB Eletta, Huddinge, Sweden

Filed Feb. 6, 1973, Ser. No. 330,036
Claims priority, application Sweden, Feb. 11, 1972, 1662/72
Int. Cl. G08b *21/00*
U.S. Cl. 340—239 R **13 Claims**



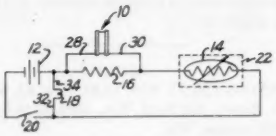
1. A flow and differential pressure monitor for indicating fluid flow comprising a fluid flow channel and a signal generating indicating means, said signal generating indicating means comprising a movable element provided with a metal portion and located within the channel, means mounting said element for movement to different positions by the fluid flowing in said channel, and externally of the channel a transducer in which an oscillator is arranged to be actuated by the metal portion at a certain position of the movable element to switch from one state to another to produce a signal in response to actuation by said metal portion, said switching from one state to another being caused by generation of eddy currents in said metal portion, the channel having a wall portion located between the movable element and the transducer comprising an electric insulating material.

3,846,775

ELECTRO-OPTICAL DISPLAY APPARATUS FOR SIGNALLING WARNING OF PREDETERMINED CONDITION AMBIENT COMPENSATED

Henry David Epstein, Cambridge, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 6, 1972, Ser. No. 295,641
Int. Cl. G02f *1/16*
U.S. Cl. 340—244 R **13 Claims**



1. Automotive warning display apparatus comprising:

a sensor having a steeply sloped positive temperature coefficient of electrical resistance;

a housing having an open end;

an electrical resistance lamp element mounted within the housing having a portion adjacent the open end thereof; a display element received in and closing the open end of the housing and in heat transfer relation with the electrical resistance lamp element including:

a first optically transmissive substrate having an optically transmissive and electrically conductive coating on a face thereof,

a second substrate having an electrically conductive coating on a face thereof, the substrates being positioned such that the coatings are adjacent and substantially parallely spaced,

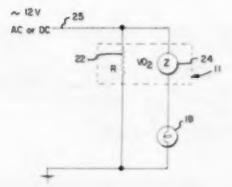
a liquid crystal composition occupying the space between the coatings on the substrates, the composition having a threshold voltage level at which an optical characteristic of the composition is changed; and voltage impressing means for impressing a voltage gradient between the coatings, the sensor being electrically coupled to the means for impressing a voltage gradient so that current is conducted through the sensor, the sensor normally operating in one of two temperature ranges, the resistance level of the sensor controlling the magnitude of the voltage gradient, the voltage impressing means including means to electrically energize the electrical resistance lamp element, heat from the lamp element being transferred to the display element to provide ambient temperature compensation.

3,846,776

LIQUID LEVEL SENSOR

David Kahn, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 16, 1973, Ser. No. 351,715
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 R **10 Claims**



1. A device, adapted to be connected to a source of current, for detecting the presence or absence of a heat conducting

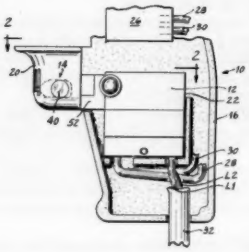
medium, said device comprising an electrical resistance element and a polyconductor having a predetermined transition temperature selected at a temperature above the temperature to which said heat conducting medium is normally subjected, said polyconductor being thermally connected to said resistance element and said resistance element having a predetermined resistance value selected to dissipate heat to said heat conducting medium at a temperature below the transition temperature of said polyconductor when surrounded by said heat conducting medium and to heat said polyconductor to a temperature above said transition temperature, in the absence of said heat conducting medium, whereby said polyconductor becomes conductive.

3,846,777

WARNING LIGHT FOR ELECTRICAL SWITCHES

Harry W. Brown, Big Bend, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 13, 1973, Ser. No. 340,930
Int. Cl. G08b *21/00*
U.S. Cl. 340—252 R **9 Claims**



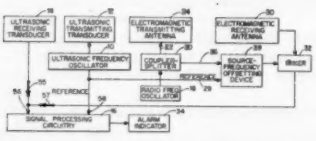
1. The combination in an electrical switch for mounting in the housing of an electric power tool and controlling the supply of electrical power to the driving motor thereof, of terminal means for attachment to a source of electrical power, a trigger actuator operable to initiate closing and opening power circuits to said driving motor, an electric lamp mounted in and movable with said trigger actuator, and resilient conductor means in circuit with said terminal means and said lamp for maintaining circuit therebetween in various positions of said actuator.

3,846,778

COMBINED ULTRASONIC AND ELECTROMAGNETIC INTRUSION ALARM SYSTEM

Aaron A. Galvin, Lexington, and L. Dennis Shapiro, Lincoln, both of Mass., assignors to Aerospace Research, Inc., Boston, Mass.

Filed June 21, 1973, Ser. No. 372,193
Int. Cl. G08b *13/16, 13/18*
U.S. Cl. 340—258 A **11 Claims**



1. An intrusion alarm system comprising:

means for transmitting an electromagnetic signal of first frequency into a zone under surveillance;

means for transmitting an ultrasonic signal of second frequency into a zone under surveillance, said electromagnetic and ultrasonic signals being related in frequency to have substantially the same wavelengths in air;

means operative to receive electromagnetic signals returned from a surveillance zone and to provide a first electrical signal in response thereto;

means operative to receive ultrasonic signals returned from a surveillance zone and to provide a second electrical signal in response thereto;

frequency shifting means operative in response to at least one of said first and second electrical signals to provide electrical signals of a common frequency;

common signal processing means operative in response to said common frequency electrical signals to provide an output signal in the presence of a valid moving target and including means for establishing a threshold representative of the steadystate condition of the surveillance zones in the absence of a valid moving target; and

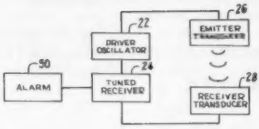
means operative to provide an alarm indication in response to exceedance of said threshold by said output signal.

3,846,779

ULTRASONIC TRANSDUCER

John G. Martner, Atherton, Calif., assignors to Charles E. Galloway, San Jose; Keith W. Gray, Sunnyvale and Leatrice J. Carr, East Palo Alton, all of Calif.

Filed Aug. 28, 1972, Ser. No. 284,344
Int. Cl. G08b *13/16*
U.S. Cl. 340—258 B **3 Claims**



1. In an alarm device for dectecting variations in ultrasonic signals and activating an alarm,

a transducer for transmitting or receiving ultrasonic signals is an air environment comprising a piezoelectric element coupled to a thin flat plate which is substantially larger than said piezoelectric element and which has a periphery maintained substantially free and unsupported during operation, said piezoelectric element having a resonant frequency at which it is excitable and said flat plate having a resonant frequency when coupled to said element substantially equal to the resonant frequency of the piezoelectric element.

3,846,780

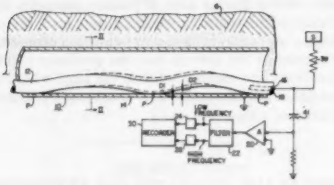
INTRUSION DETECTION SYSTEM

Heinz Gilcher, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 24, 1973, Ser. No. 382,264
Int. Cl. G08b *13/16*
U.S. Cl. 340—261 **11 Claims**

1. Apparatus for monitoring disturbances caused by mechanical shock, pressure, impact, etc., comprising in combination, a substantially rigid first electrically conductive member adapted to respond to disturbances, a second electrically conductive member disposed in a loose fitting, intermittent contacting relationship with said first electrically conductive member and being mechanically free to move with respect to said first electrically conductive member, electrical insulating material disposed between said first and second electrically

conductive members to establish a capacitance therebetween, disturbance of said substantially rigid first electrically conductive member resulting in mechanical displacement of said



second electrically conductive member with respect to said first electrically conductive member, the displacement producing a change in said capacitance.

3,846,781

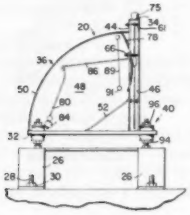
SLOPE INDICATOR AND ROLL-OVER WARNING INDICATOR FOR EARTHMOVING EQUIPMENT

Lawrence S. Smith, Box 155, Wellington, Nev. 89444

Filed Jan. 10, 1973, Ser. No. 322,437

Int. Cl. G08b *21/00*

U.S. Cl. 340—267 R **13 Claims**



1. A slope indicator for mounting on earthmoving equipment to indicate the slope on which the equipment is working, said slope indicator comprising, a double walled, hollow housing having a front plate with sideslope measurement markings located along a lower part of the plate, said plate being transparent in at least the portion having said sideslope measurement markings, mounting means for mounting the housing on earthmoving equipment, pendulum means mounted for swinging movement within the interior of the housing, said pendulum means including a pendulum and a pointer for indicating the marking corresponding to the sideslope on which the earthmoving equipment is working, said pendulum means including pivot means connecting the top of the pendulum behind the front plate to a top part of the plate whereby the sideslope is continuously indicated by the pointer behind the measurement markings of the front plate, a viscous fluid within the housing for dampening movement of the pendulum, leveling means for leveling the slope indicator on the earthmoving equipment, and including cushioning means in the leveling means for absorbing a substantial part of the earthmoving equipment vibration while letting some of the vibration through to prevent sticking of the pendulum within the double walled housing.

3,846,782

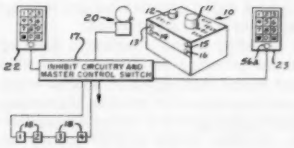
DETECTION SYSTEM FOR PROTECTED AREA WITH KEYBOARD INHIBITOR FOR RE-ENTRY

Robert S. Brodsky, 7605 New Castle Dr., Annandale, Va. 22003

Filed Jan. 31, 1973, Ser. No. 328,451

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **10 Claims**



1. A detection system for a protected area comprising: a plurality of sensing elements, connected in circuit, each operatively associated with an access to said area for detecting an unauthorized breach of said area, master switch means adapted to be enabled or inhibited and responsive to said sensing elements only when enabled for generating an output signal when one of said elements indicated an alarm condition in said area; a manual selection switch, selectively settable to one of a SURVEILLANCE position and an EXIT position; said master switch means being enabled when said manual switch is set to said SURVEILLANCE state; a keyboard having a plurality of switches including unlock switches accessible external to said protected area; inhibit circuit means responsive to the actuation of predetermined unlock switches of said keyboard switches when said manual switch is set in said EXIT position for inhibiting said master switch means whereby an authorized re-entry may be made into said protected area without generating said output signal; and EXIT switch means located within said protected area for de-activating said inhibit circuit means when it is desired to leave said protected area without sounding an alarm; and reset circuit means responsive to at least one of said keyboard switches other than said unlock switches for re-activating said inhibit circuit means after a person has left said protected area, whereby said system is left in an active state but capable of being inhibited when said keyboard unlock switches are actuated in proper combination.

3,846,783

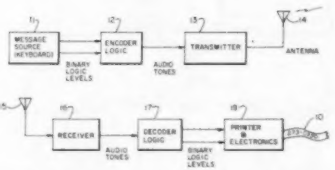
REMOTE PAGING WITH MESSAGE STORAGE

Sheldon P. Apsell, Nahant; Olof C. Johnson, Jr., Chelmsford, and Robert W. Whitney, Burlington, all of Mass., assignors to Eikonix Corporation, Burlington, Mass.

Filed Mar. 12, 1973, Ser. No. 340,225

Int. Cl. H04m *11/02*

U.S. Cl. 340—311 **25 Claims**



1. A personal paging system comprising,

a source of digital message signals at a first location,

a source of digital address signals at said first location identifying a recipient of a message,

means for characterizing said digital address and message signals as a sequence of audio tones,

means for transmitting said tones upon a radio frequency carrier with the address signal tones preceding the message signal tones,

a personally transportable receiving system including means for receiving said radio frequency carrier and detecting said tones at a second location remote from said first location,

input register means for receiving the detected tones and for storing each digital address word and message word one-by-one as the words are received,

address decoding means coupled to said input register means for providing an identity signal when the input register means then stores an address word identifying that receiving system for receiving the message carried by the digital message words immediately following,

message decoding means coupled to said input register means for decoding each digital message word as it is stored in said input register means when enabled,

means responsive to said identity signal for enabling said message decoding means to provide a sequence of decoded digital message word signals representative of said message,

means for storing said decoded digital message signals and reproducing them in visible form identifiable as alphanumeric characters,

a source of an end of message signal in digital form at said first location,

means for transmitting said end of message signal after said message signals,

and means coupled to said input register means responsive to said end-of-message signal for disabling said message decoding means.

3,846,784

ELECTRONIC DIGITAL DISPLAYS

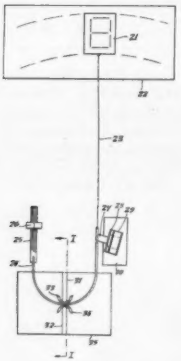
Clive Marles Sinclair, 18 Newton Rd., Cambridge, England

Filed May 7, 1973, Ser. No. 357,719

Claims priority, application Great Britain, May 22, 1972, 23893/72

Int. Cl. G09f *9/32*

U.S. Cl. 340—336 **11 Claims**



1. A digital display apparatus for displaying a plurality of alphanumeric characters including: a single electronic display unit having a plurality of individual segments which can be separately illuminated; an arm carrying the electronic display unit at one end thereof; means for mounting said arm so that the end of the arm carrying the display unit can be made to reciprocate through a given arc of a circle; means defining a plurality of spaced positions along the arc of the circle at which the required sequence of alphanumeric characters can be displayed from the single display unit; display unit reciprocating means energized at a given frequency to cause a given periodicity of reciprocation to the end of the arm carrying the display unit; means for energizing the appropriate individual segments of the display unit at precise moments as the unit passes each of the spaced positions during each reciprocation, said display unit energizing means being synchronized with the reciprocation of the arm so that the positions of display are identical from one reciprocation to the next, whereby a series of alphanumeric characters are continuously visible due to persistance of vision.

3,846,785

PROCESS AND APPARATUS FOR EXTENDING THE RANGE OF A DIGITAL TO ANALOG CONVERTER TO BE USED WITH A STRIP RECORDER

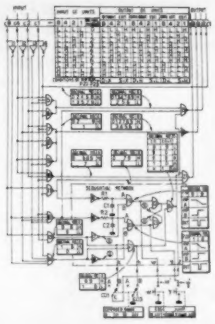
Armando Rossi, Corso Giambone 68, Turin, Italy

Filed Aug. 21, 1972, Ser. No. 282,458

Claims priority, application Italy, Nov. 24, 1971, 70843/71

Int. Cl. H03k *13/243*; **G01d** *9/02*

U.S. Cl. 340—347 DA **8 Claims**



1. In a recording system comprising a digital to analog converter which receives binary coded decimal (BCD) signals representing a quantity being measured and applies one decimal digit of the quantity to a strip recorder which utilizes a recording medium having a decimal amplitude scale, the process for extending the amplitude range of the strip recorder by adding zones to the ends of the scale, comprising the steps of:

a. encoding the BCD signals into a further code having an amplitude range greater than the BCD range;

b. detecting the BCD value of zero in the digit being recorded;

c. detecting the direction of change of the quantity being measured;

d. encoding a BCD zero from the digit into a number in said further code whose amplitude is greater than the encoded value of BCD 9, when the quantity is increasing in value, and encoding a BCD zero from the digit into a number in said further code whose amplitude is less than the encoded value of BCD 1, when the quantity is decreasing in value; and

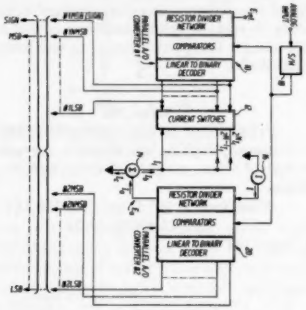
e. providing a scale transition signal for the digit being recorded at a value increasing from BCD zero when the quantity is increasing, and providing a scale transition signal for the digit being recorded at a value decreasing from BCD zero when the quantity is decreasing.

3,846,786

HIGH SPEED PARALLEL-CASCADED ANALOG TO DIGITAL CONNECTOR

James H. Brown, Severna Park; James E. Buchanan, Bowie, and Steven Morrison, Randallstown, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1973, Ser. No. 322,350
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **11 Claims**



1. A parallel-cascaded analog to digital converter for converting an analog input signal to a 2N bit digital output signal, comprising:

a first parallel analog to digital converter receiving and converting the analog input signal to a first N bit digital output signal comprising the more significant bits of the 2N bit digital output signal,

a summer,

a constant current source,

a second parallel analog to digital converter receiving and converting the analog input signal to a second N bit digital output signal comprising the lesser significant bits of the 2N bit digital output signal,

said second analog to digital converter including reference voltage level establishing means connected in circuit with said summer means and energized by said constant current source for establishing a range of reference voltage levels.

current switching means connected in circuit with said summer and responsive to the first N bit output signal to control the current flow in said summer for selectively establishing voltages of predetermined levels across said summer said voltages of predetermined levels, respectively corresponding to the bit values of the first N bit output signal, and correspondingly selectively varying the range of reference voltage levels established by said reference voltage establishing means.

3,846,787

TIME DIVISION MULTIPLEXER EMPLOYING DIGITAL GATES AND A DIGITAL-TO-ANALOG CONVERTER

Clayborne E. Myers, Oviedo, and Arthur E. Vreeland, Eau Gallie, both of Fla., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

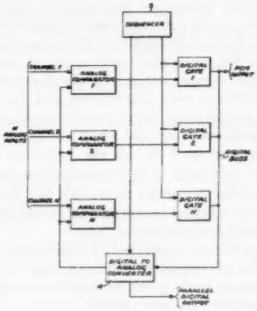
Filed Aug. 17, 1972, Ser. No. 281,602
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **3 Claims**

1. An improved multi-channel time division multiplexer for multiplexing a plurality of analog signals and generating a PCM output and a parallel digital output, comprising:

a digital-to-analog converter having an input, an analog output and a plurality of parallel digital outputs;

a plurality of analog comparators, one in each channel, having first and second inputs, said first input coupled to a different one of said plurality of analog signals and said second input coupled to the analog output of said digital-to-analog converter, and having a bistable output which assumes a first state if said analog signal is greater than said digital-to-analog converter analog output and a second state if said analog signal is less than said digital-to-analog converter analog output;

a plurality of digital gates, one in each channel, having first and second inputs and an output, said first input coupled to the output of said analog comparator in the same channel and said output coupled to the outputs of the remaining digital gates, for forming said multiplexer PCM output and said digital-to-analog converter input; and



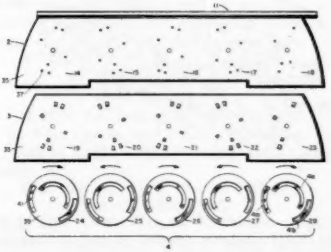
a sequencer control unit having a first plurality and second plurality of outputs each of said first plurality consisting of pulses at channel rate, coupled to said second input of one of said plurality of digital gates, and said second plurality, consisting of pulses at bit rate, coupled to said digital-to-analog converter, whereby the voltage of each of said analog signals is converted into an n-bit binary number according to the half-split approximation process.

3,846,788

POLYDECADE DECIMAL TO DIGITAL ENCODER

Salvatore R. Calabro, Belleville, N.J.; John A. Calabro, Forest Hills, N.Y., and Peter R. Mick, East Orange, N.J., assignors to Automated Technology Corporation, Hackensack, N.J.

Continuation-in-part of Ser. No. 128,237, March 26, 1971, abandoned. This application Dec. 12, 1972, Ser. No. 314,391
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **8 Claims**



1. A converter for encoding the decimal digits represented by the successive stages of a multi-stage meter into binary coded form, each stage of said meter including a rotatable shaft which is angularly displaceable on a 10:1 ratio with

respect to the higher adjacent shaft to record decimal readings of measurements effected by said meter, said converter comprising:

means establishing a plurality of point light sources;

a plurality of point light sensors in one-to-one optical path registration with said point light sources;

a plurality of encoding wheels, one each of said wheels being mounted for rotation upon each of the said shafts of stages of said meter said shafts being intergeared in a 10:1 ratio, the plane of said wheels intercepting the light path between said sources and sensors in registration therewith, and said wheels being provided with slots extending along circular tracks on said wheels, whereby groups of said sensors are illuminated in accordance with the angular position of said wheels to provide signal outputs from said illuminated sensors; at least four said light sensors being associated with each of said encoding wheels, said sensors being spatially distributed with respect to said slots such that a distinctive four-bit digitally encoded output may be provided for each of the ten angular positions about said wheel corresponding to decimal readings from 1 to 10, the group of said sensors associated with each of said wheels numerically exceeding the number necessary to provide said four-bit output defining said angular positions and including paired sensors in lead-lag arrangement; and

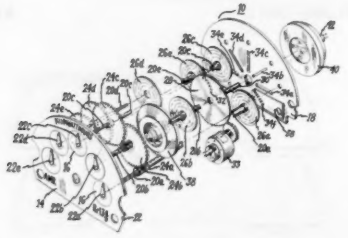
decoder logic means connected to receive the outputs from two groups of sensors and provide said four-bit digital output signals each group in binary excess three code representative of the said angular positions of said wheels in accordance with the said enabled outputs from said sensors, said decoder logic including means to generate an ADVANCE/RETARD command signal in accordance with the sensor output readings derived from the said wheel associated with the least significant digit (LSD) of said meter, and said apparatus including means for selecting one or the other of said two groups of four bit signals the outputs from four among each said group of sensors, minimizing the possibility of ambiguous readings at said higher decade.

3,846,789

REMOTE-READING REGISTER WITH ERROR DETECTING CAPABILITY

Warren R. Germer, Rochester, and Ansell W. Palmer, Hampton, both of N.H., assignors to General Electric Company, Pitsfield, Mass.

Filed Apr. 6, 1973, Ser. No. 348,513
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **3 Claims**



1. A meter register of the type comprising at least two indicator shafts rotatably coupled to one another in a fixed ratio number of relative rotation greater than one, wherein the improvement comprises means for generating an electrical code representative of the angular position of each of said shafts to an approximate resolution of at least twice said ratio number, said means comprising:

a six bit binary code angular position indicator rigidly attached to each of said shafts, said position indicators being optical gray code encoding discs having at least six rings of optical encoding modulations at different radial locations and providing an actual resolution of about one in 30 angular positions for each of said shafts, said shafts being mutually parallel and having their ends arranged in an arc on a backplate of said register;

a single rotating scan disc comprising a series of radially spaced, angularly staggered, graded arc scan slots for scanning said encoding discs; and

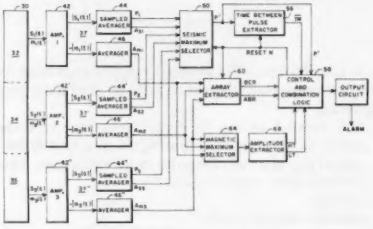
a series of elongated reading slots arranged in an arc configuration on said backplate, each one of said reading slots being along a line perpendicular to and intersecting one of said shafts.

3,846,790

INTRUSION DETECTION SYSTEMS

David P. Erdmann, Hopkins, and Dennis L. Kurschner, Minnetonka, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed June 8, 1973, Ser. No. 368,162
Int. Cl. G08b *13/24*
U.S. Cl. 340—258 D **12 Claims**



1. Intrusion detection apparatus for processing a plurality of sensor signals, each of which is indicative of the level of magnetic disturbances in a distinct segment of a predetermined segmented boundary, comprising:

averaging means for receiving said sensor signals, and producing a plurality of output signals which are the time averages thereof;

array extractor means connected to receive said output signals from said averaging means and responsive thereto to compare the relative amplitudes of the signals received with one another, said array extractor means generating an inhibit signal if the relative amplitudes are within a predetermined range;

threshold detection means, responsive to said averaged sensor signals for detecting when one of said averaged sensor signals exceeds a predetermined threshold amplitude, and upon such detection generating an activate signal; and

alarm control logic, associated with said threshold detection means and said array extractor means, and operable to produce an alarm actuation signal at times when said activate signal is generated by said threshold detection means and said inhibit signal is not being generated by said array extractor means.

3,846,791

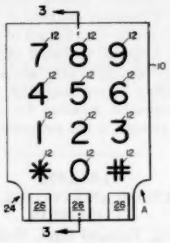
SOLID STATE KEYBOARD

Richard C. Foster, 11750 Eight Mile Rd., Stockton, Calif. 95207

Filed Oct. 2, 1972, Ser. No. 294,038
Int. Cl. H04l *15/06*
U.S. Cl. 340—365 C **9 Claims**

1. A solid state keyboard comprising a plurality of conductive terminals, signal source means for generating a high fre-

quency signal, coupling impedance means connected to each of said terminals for applying said signal to said terminals and sensing means for each of said terminals for sensing a reduction in signal level at the output of said coupling impedance means, the product of the frequency of said signal and the impedance of said coupling impedance means being from about 2×10^9 Hertz-ohms to about 50×10^9 Hertz-ohms so that conductive contact of the operator's finger on said terminal is required to reduce the signal level sufficiently to actuate said sensing means.



3,846,792

ELECTRIC SOUND-PRODUCING DEVICE

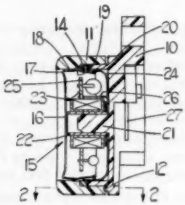
Richard Wolliscroft Haigh, Harborough Bank, Shelsley Beauchamp, England

Filed Nov. 5, 1971, Ser. No. 196,032

Claims priority, application Great Britain, Nov. 7, 1970, 53087/70; Apr. 20, 1971, 10310/71

Int. Cl. G08b *3/10*

U.S. Cl. 340—384 E **24 Claims**



1. An electrical sound-producing device comprising a resilient diaphragm of ferromagnetic material having a substantially flat portion, an electromagnet including a tubular core having one end adjacent said flat portion of the diaphragm and spaced therefrom by an air gap, the other end thereof being mounted on a spigot, whereby said diaphragm is deformed when current is supplied to said electromagnet, and an oscillator for repeatedly supplying current in short duration pulses to said electromagnet.

3,846,793

OPEN CIRCUIT AND GROUND DETECTOR FOR FIRE AND BURGLAR ALARM SYSTEM

Charles W. Cook, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Filed Apr. 30, 1973, Ser. No. 355,963

Int. Cl. G08b *19/00*

U.S. Cl. 340—409 **5 Claims**

1. The combination of first and second transistors each having a base and an emitter and a collector,

a source of bias currents,

third and fourth transistors each having a base and an emitter and a collector,

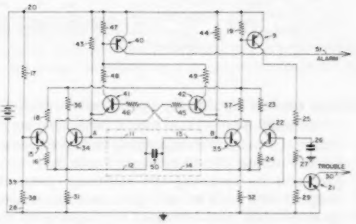
a first conductive path between the base and emitter of the first transistor,

a second conductive path between the base and emitter of the second transistor,

the collector-emitter circuits of the four transistors being connected in parallel, and

means, including a first resistor between ground and the emitters of the first and third transistors and a second resistor between ground and the emitters of the second and fourth transistors, for biasing the four transistors so that, in response to an open on either of said conductive paths one of the first and second transistors becomes conductive and so that in response to a ground on either of said paths one of said resistors is short-circuited and one of the third and fourth transistors becomes conductive,

a trouble-indicating network coupled to the collectors of all of said transistors and responsive to collector current in any of the first, second, third or fourth transistors to indicate a fault in one of said conductive paths,



normally open switch contacts between said conductive paths,

fifth and sixth transistors each having a base and an emitter and a collector, the emitters of the fifth and sixth transistors being connected to the bases of the first and second transistors, respectively, the bases of the fifth and sixth transistors being coupled to the emitters of the second and first transistors, respectively, and the collectors of the fifth and sixth transistors being connected in parallel,

an alarm indicator in series with the collectors of said fifth and sixth transistors and responsive to the absence of collector currents in both of the fifth and sixth transistors to provide an alarm, and

means for completing the biasing on said fifth and sixth transistors so that the sixth transistor conducts in the absence of any open or ground in either path.

3,846,794

ALARM RETRANSMISSION SYSTEM

Tom W. Le Nay, Encino, and Donald L. Hadden, Fountain Valley, both of Calif., assignors to Baker Industries Inc., Parsippany, N.J.

Filed Mar. 15, 1973, Ser. No. 341,541

Int. Cl. G08b *19/00*

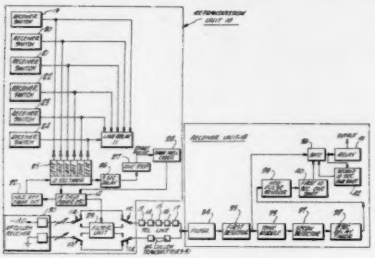
U.S. Cl. 340—415 **11 Claims**

1. An alarm retransmission system for use in a McCulloh circuit for presignaling a selected receiver unit by a first signal and subsequently providing additional data by a second signal to the selected receiver unit comprising:

first means for transmitting a basic signal at a preselected frequency in response to an alarm event;

a command unit electrically connected to said first means capable of modulating the basic signal at a plurality of predetermined frequencies thereby forming a first signal; a coder unit electrically connected to said first means capable of modulating the basic signal in a code thereby forming a second signal, said code being indicative of the origin of the alarm event;

a plurality of receiver units, each of said receiver units being connected in series in a single circuit, each of said receiver units being adapted to receive the first signal and the second signal;



a tone module electrically connected in each of said receiver units, each of said tone modules having a different frequency range corresponding to a predetermined frequency output of said command unit; and

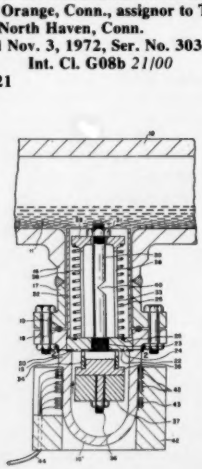
a gate unit for receiving the additional data, electrically coupled with each of said tone modules in each of said receiver units and activated in response to the second signal within a predetermined time after the appropriate first signal has been received by said appropriate receiver unit, said appropriate receiver unit including said tone module of the corresponding frequency range as the preselected frequency of said command unit.

3,846,795

EARLY WARNING MATERIAL FAILURE INDICATOR

Cecil Roy Jones, Orange, Conn., assignor to Transfer Systems Incorporated, North Haven, Conn.

Filed Nov. 3, 1972, Ser. No. 303,549
Int. Cl. G08b *21/00*
U.S. Cl. 340—421 **13 Claims**



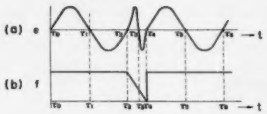
1. Apparatus for providing an early warning indication of impending failure of a structural element subjected to a corrosive environment, comprising a corrodible member, means for exposing said corrodible member to the corrosive environment, means for stressing said corrodible member including means for applying to said corrodible member a tensile stress such as to cause movement of the stressing means upon failure of the corrodible member, the amount of stress applied to said corrodible member being such as to cause failure by corrosion of the corrodible member before failure of the structural element, a magnetic member coupled to the corrodible member and adapted to move upon failure of the corrodible member, and means in response to failure of the corrodible member to provide an indication of said failure, said failure responsive means including electromagnetic means magnetically coupled to the magnetic member for detecting movement thereof causing a change in the magnetic coupling.

3,846,796

OPERATING METHOD AND SYSTEM FOR PREDICTING COLLISION

Kazuo Oishi, Oobu; Toshiaki Kato, Nishio; Takeshi Matsui, Kariya; Matatoyo Hinachi, Nagoya, and Takashi Yamada, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio-shi, Aichi-ken, Japan

Filed Jan. 15, 1973, Ser. No. 323,395
Claims priority, application Japan, Jan. 17, 1972, 47-6736
Int. Cl. G01s *9/24, 9/46*
U.S. Cl. 343—7.5 **5 Claims**



1. An operating method for predicting collision comprising the steps of:

transmitting the first wave to a target,

receiving said first wave reflected by said target, obtaining a second wave of frequency corresponding to the frequency of said first wave,

causing said second wave to interfere with said reflected wave to produce a first beat wave by Doppler effect,

changing the frequencies of said first and second waves at the occurance of a specified phase angle of said first beat wave, and

detecting at least either one of the polarity and the amount of change of phase of a second beat wave which is generated similarly as said first beat wave according to the frequency variation.

3,846,797

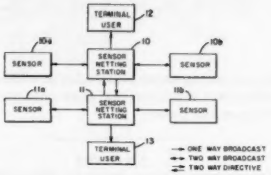
FORWARD AREA ALERTING SENSOR NETTING SYSTEM

James E. Brown, Somerville; Andrew B. Woods, Decatur, both of Ala., and Howard S. Kliger, Altamonte Springs, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 25, 1972, Ser. No. 292,199
Int. Cl. G01s *9/00*
U.S. Cl. 343—6 R **5 Claims**

1. A forward area alerting sensor netting system including a plurality of sensor netting stations; a plurality of sensors, with at least one of said sensors linked to each of said sensor netting stations; and a plurality of terminal users; and means in said stations for broadcasting information for said users; wherein said sensor netting stations are linked to respective

sensors by first communication means including a first receiver and a first transmitter and are linked to said terminal users by second communications means including a second receiver and a second transmitter; and identification handling means having inputs connected to said first and second receivers and having a friend output and two foe outputs; target buffer means, connected between one of said foe outputs and said second transmitter, the other foe output also connected to said second transmitter, and said friend output connected to said first transmitter; wherein each of said sensors includes data pick-off means; first and second adder means each having an output and first and second inputs; parallax correcting



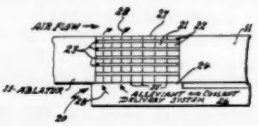
means connected to the first input of each of said adders; said data pick-off means connected to the second input of said first adder; means for transmitting to said first receiver of said first communication means; means for receiving from said first transmitter of said first communication means; said output of said first adder connected to said means for transmitting; the output of said means for receiving connected to said second input of said second adder; friend indicating means; said output of said second adder connected to said friend indicating means.

3,846,798

INTEGRATED WINDOW, ANTENNA, AND WAVEGUIDE WITH PLASMA ALLEVIATION

James R. Carl, Bridgeton, Mo., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Aug. 12, 1968, Ser. No. 752,082
Int. Cl. H01q *1/28*
U.S. Cl. 343—705 **10 Claims**



1. An electromagnetic wave transmitting and receiving structure, comprising:

a. an antenna;

b. an electromagnetic wave permeable window which includes:

(1). a plurality of alternating bonded layers; and

(2). a plurality of hollow channels, essentially parallel to each other and extending throughout said window.

c. means for supporting said electromagnetic wave permeable window within said antenna; and

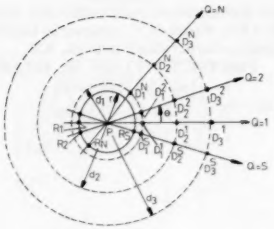
d. a waveguide affixed to said antenna.

3,846,799

ELECTRONICALLY STEP-BY-STEP ROTATED DIRECTIVE RADIATION BEAM ANTENNA

Michel Gueguen, Maurepas, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 13, 1973, Ser. No. 387,837
Claims priority, application France, Aug. 16, 1972, 72.29274
Int. Cl. H01q *19/00*
U.S. Cl. 343—833 **2 Claims**



1. A directive radiation beam antenna of the type wherein said beam is rotated angularly in a step-by-step fashion comprising:

a plurality of S identical Yagi-type arrays having a common driven element, each of said plurality comprising:

one reflector parasitic element; and

a plurality p of director parasitic elements D_k where $1 \leq k \leq p$;

wherein the array angularly ranked Q is derived from the array Q-1 by rotating it by an angle $\theta = 360°/S$ around the axis of said common driven element;

a ground plane comprising a circular metal ground plate having a common axis with said common driven element, the $S(1+p)$ parasitic elements having a height of approximately $l/4$ and arranged perpendicular to said ground plate;

a source of a bias signal;

a source of RF energy mounted between the base of said common driven element and said ground plate for feeding said common driven element;

a plurality of unidirectional current conducting elements each coupled to said ground plate, said source of bias signal and one of the $S(1+p)$ parasitic elements, the impedance of each of said unidirectional elements being dependent upon said bias signal; and

a logic control device for controlling the step-by-step radiation beam rotation, said control device comprising:

an S-stage shift register having a clock frequency equivalent to S/τ, τ being the time duration required for a 360° beam rotation; and

a plurality of pS three input OR-gates, each having outputs connected to the bias input of each unidirectional current conducting element associated with a director element, each of the S shift register outputs being provided with $(1+3p)$ connections, the first coupled from the Qth stage to the bias input of the unidirectional element associated with the director element angularly ranked Q, p second ones coupled from the Qth stage output to the input of each of the OR-gates having outputs which control unidirectional elements associated with director elements angularly ranked Q, p third ones coupled from Qth stage output to the inputs of each of the p OR-gates whose outputs control the unidirectional elements associated with director elements of arrays angularly ranked $(Q+M_k)$ or $(Q+M_k-S)$ if $(Q+M_k)$ is greater than S, and p fourth ones coupled from the Qth stage to the input of each of the OR-gates whose outputs control unidirectional elements associated with director elements of arrays

angularly ranked $(Q-M_k)$ or $(Q-M_k+S)$ if $(Q-M_k)$ is less than 0, where the k values of M_k are independent of Q and are determined by the polar coordinates of the closest director elements D_k of generatrices of a cylinder having a parabolic cross-section having as a focus the base of the driven element and having as an apex the base of the reflector element of the associated array.

3,846,800

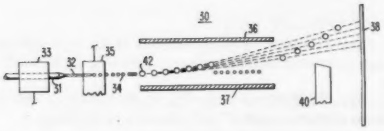
INK JET RECORDING METHOD AND APPARATUS

Winston H. Chen, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,149

Int. Cl. G01d *15/18*

U.S. Cl. 346—1 **7 Claims**



1. In a method of printing on a document wherein ink is supplied to a nozzle under pressure and varicosities are produced in the ink stream to cause the stream to break up into uniformly sized and spaced drops in the region of a charging electrode which is energized to charge selected ones of said drops for causing them to deflect while passing through an electric field, the improvement which comprises;

energizing said charging electrode with signal voltages of one polarity at spaced time intervals to charge spaced ink drops to deflect them onto said document in a predetermined pattern, and energizing said charging electrode at intervening time intervals with a base voltage of the opposite polarity and sufficient value to cause selected ones of said signal voltage charged drops to merge in flight before being deflected to print on said document.

3,846,801

METHOD AND APPARATUS FOR ELECTROGRAPHIC DRAWING

Hans-Christoph DuMont, Malmsheim; Rainer Strohwald, and Helmut Reum, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 21, 1973, Ser. No. 343,397

Claims priority, application Germany, Mar. 30, 1972, 2215519

Int. Cl. G01d *15/06*

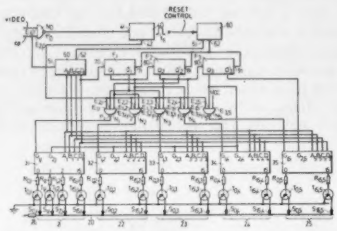
U.S. Cl. 346—74 E **11 Claims**

1. The method of visually recording electrical information by means of a multiplicity of writing electrodes, arranged in a substantially linear array and electrically insulated from each other, on electrosensitive sheet material, which method comprises the steps of:

preparing information to be recorded in sequential form;

gating said information at intervals to produce a sequence of pulses having a predetermined duration less than the shortest time required to produce local burnout on said sheet material therefrom, and

connecting individual electrodes of said array in succession, for time intervals longer than the duration of said pulses to a circuit supplying said sequence of pulses,



thereby energizing those electrodes so connected when one of said pulses is present and then only for the duration of said respective pulses.

3,846,802

SELF RENEWING STYLUS STRUCTURE

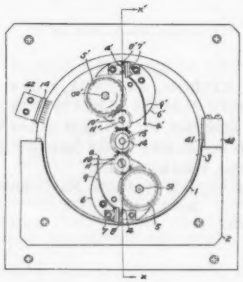
Hirosi Kyotani, Osaka; Yositaka Murono, Tenri, and Katuhiko Siojima, Nara-Ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 18, 1973, Ser. No. 361,582

Claims priority, application Japan, May 19, 1972, 47-51382; Feb. 8, 1973, 48-15901; Feb. 14, 1973, 48-18132; Feb. 16, 1973, 48-19530

Int. Cl. G01d *15/06, 15/20*

U.S. Cl. 346—74 E **12 Claims**



1. A recorder comprising:

a record member on which a desired pattern is to be reproduced;

a recording electrode stylus means wound in a spiral configuration with a tendency to enlarge and unwind said configuration in response to a revolution torque;

a rotatably mounted disc means;

means for rotating said disc means at a given velocity during a recording operation;

reel means for accommodation of said spirally wound electrode stylus, said reel means being rotatably secured on an axis on said disc means; and

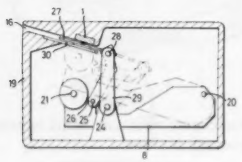
stylus protrusion means coupled to said reel means for imparting to the stylus means, a revolution torque of a selected value which tends to enlarge and unwind said spiral configuration and cause a tip portion of said stylus to protrude from said reel means toward a recording position on said record member.

3,846,803

DISTANCE MEASURING INSTRUMENT FOR MOTOR VEHICLES

Lennart Borgstrom, Svangsta, Sweden, assignor to Recard Taxameter AB, Halmstad, Sweden

Filed June 21, 1973, Ser. No. 372,493
Claims priority, application Sweden, June 28, 1972, 8507/72; June 28, 1972, 8508/72
Int. Cl. G01c 22/00
U.S. Cl. 346—95 8 Claims



1. A distance measuring instrument for motor vehicles by which the distance covered by the vehicle is printed by symbols, preferably figures, on a card, comprising a casing having a slit into which a card is insertable, an ink containing means adjacent the slit, an accummulating counting mechanism within the casing, means for moving said counting mechanism from a protected non-operative position remote from the slit to an operating position adjacent the slit for coaction with the ink containing means for stamping the accummulated value on the card inserted in the slit, said means for moving said accumulating counting mechanism comprising a frame, an axle serving simultaneously as a torsion spring about which said frame is rotatably supported, control means for manual actuation of the stamping of the card inserted into the slit, and a locking pawl retaining the frame for the counting mechanism in protected non-operative position until the control means is actuated to release the locking pawl, characterized in that said slit is provided with an opening through which the counting mechanism coacts with the ink containing means during stamping, a curtain covering the opening in the non-operative position of the counting mechanism and means connecting the curtain with the counting mechanism so that the curtain exposes the opening immediately prior to stamping and returns to the position covering the opening immediately after stamping.

3,846,804

FORCE BALANCE INSTRUMENT WITH OVERLOAD RELEASE MECHANISM

Jack Mort White, Chili, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 24, 1971, Ser. No. 156,392
Int. Cl. G08c 19/08
U.S. Cl. 340—199 6 Claims

1. A force balance instrument including:

a first motor, a second motor and a linkage, said linkage having a first lever and a second lever connecting said linkage to said first motor and to said second motor, respectively;

said first motor being responsive to a first condition for first deflection of said first lever with respect to ground in proportion to the magnitude of said first condition;

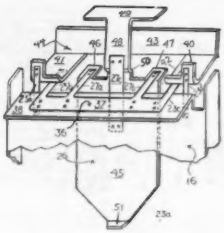
said second motor being responsive to a second condition for second deflection of said second lever with respect to ground in proportion to the magnitude of said second condition;

said linkage being responsive to said first deflection and to said second deflection to respectively convert them into a first force and a second force acting on said second lever so as to urge said second lever to deflect in opposing senses about a first given axis;

there being control means for causing the magnitude of said second condition to be of such value that said forces create equal and opposite moments about said first given axis, whereby the magnitude of said second condition is a measure of the magnitude of said first condition;

said second lever having as part therof;

a third lever, said second and third levers being flexure-pivoted together for relative deflection about a second given axis;



flexible, inextensible means integrally fixed to both said second and third levers for limiting said relative deflection when of one sense, while providing for said relative deflection when of a sense opposite said one sense;

spring means interconnecting said levers for urging said relative deflection to be in said one sense and for resisting relative deflection in the other said sense;

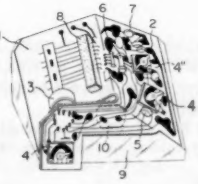
and one of said second and third levers being flexure-pivoted to ground for defining said first given axis.

3,846,805

EXPOSURE CONTROL CIRCUIT STRUCTURE

Takehiko Kiyohara, Zama, and Tetsuya Taguchi, Kawasaki, both of Japan, assignors to Canon Kabashiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1974, Ser. No. 435,774
Claims priority, application Japan, Feb. 6, 1973, 48-15016
Int. Cl. G03b 13/02, 17/12
U.S. Cl. 354—23 5 Claims

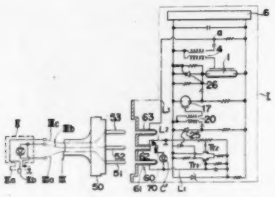


1. An exposure control circuit structure for a photographic camera comprising a flexible print substrate, an electric circuit printed on said substrate, and at least one photoelectric element provided on said substrate and connected to said electric circuit, said print substrate being disposed on and along non-functional faces of an optical element in the viewfinder's optical system of the camera.

3,846,806
AUTOMATIC FLASH DEVICE FOR A PHOTOGRAPHIC CAMERA

Kotaro Yata, and Motonobu Matsuda, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1973, Ser. No. 427,858
Claims priority, application Japan, Dec. 30, 1972, 48-126; Feb. 8, 1973, 48-16970
Int. Cl. G03b *15/05*
U.S. Cl. 354—31 **7 Claims**



1. An automatic flash device for use in association with a photographic camera having a shutter synchronized switch, which comprises:

a flash housing structure accommodating therein a flash circuit which comprises means including a flash capacitor and a flash tube for selectively artificially illuminating a subject to be photographed through said flash tube upon discharge of voltage stored on said flash capacitor, said discharge of voltage occurring upon closure of said shutter synchronized switch in the photographic camera, a light measuring circuit means responsive to an incident pulse of reflected light energy originating from said flash tube to produce an electrical signal indicative of the amount of said reflected light energy, a triggering circuit means responsive to said electrical signal from said light measuring circuit means to produce a trigger pulse and a switch circuit means responsive to the trigger pulse for terminating the flash illumination; and

a sensor housing structure having a mounting shoe of substantially inverted T-shape for connection with the camera and accommodating therein a photo cell which forms a part of said light measuring circuit means, said sensor housing structure being separate of said flash housing structure and adapted to be coupled to the camera through said mounting shoe to complete a circuit for said shutter synchronized switch and said photo cell.

3,846,807
AUTOMATIC EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERAS

Jiro Sekine, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

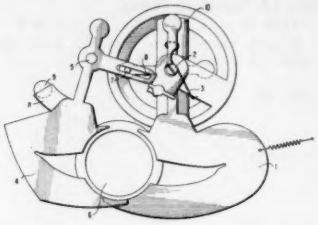
Filed Feb. 14, 1974, Ser. No. 442,554
Claims priority, application Japan, Feb. 14, 1973, 48-18629
Int. Cl. G03b *9/02*
U.S. Cl. 354—42 **7 Claims**

1. An automatic exposure control device for a camera for controlling a diaphragm in accordance with the illumination of an object to be photographed comprising

a photoreceptor which receives light from said object and generates an output current in proportion to the amount of light received,

at least one movable diaphragm control blade moved in accordance with the output current from said photoreceptor for controlling the aperture size, and

light intercepting means associated with said diaphragm control blade for reducing the amount of light received by

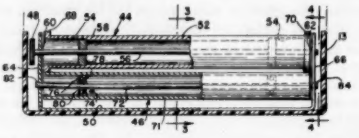


said photoreceptor when said blade approaches the fully opened aperture position.

3,846,808
PROCESSOR ASSEMBLY

James M. Whall, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1974, Ser. No. 429,898
Int. Cl. G03b *17/50*
U.S. Cl. 354—86 **23 Claims**



1. In a self-developing camera of the type in which an exposed film unit is processed by passage thereof between a pair of oppositely biased spreader surfaces, the improvement comprising:

a pair of rollers each including a tubular roller shell, a flexible shaft extending through said shell and means for mounting said shells on said shafts respectively; and

means for supporting said shafts in coplanar relationship to establish a working nip between said roller shells and to flex said shafts to bow about said mounting means, thereby to hold said roller shells yieldably one against the other at said nip under the elastic restoration force of said flexed shafts.

3,846,809
REFLECTORS AND MOUNTS FOR PANORAMIC OPTICAL SYSTEMS

Joseph A. Pinzone, 829 Bushwick Ave., Brooklyn, N.Y. 11221; Gerald J. Troje, 1719 Centre St., Ridgewood, N.Y. 11227, and Edward L. Schiavone, 10502 Insley St., Silver Spring, Md. 20902

Filed Oct. 18, 1973, Ser. No. 407,588
Int. Cl. G03b *37/00*
U.S. Cl. 354—95 **8 Claims**

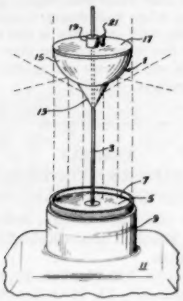
1. In an optical system for recording panoramic images with a photographic camera having a lens mounted within a lens barrel the combination comprising

a reflector containing a surface of revolution,

the axis of said surface of revolution being concentric with the viewing axis of said camera, and

said surface of revolution being so oriented with respect to said camera lens as to reflect a view of the panorama along said camera axis,

means for mounting said reflector in spaced position in front of the lens of said camera,



said means for mounting comprising at least one transparent stem member having one end adapted for connection to the lens barrel of the camera and the other end adapted to support said reflector,

whereby said camera can record a panoramic image

3,846,810

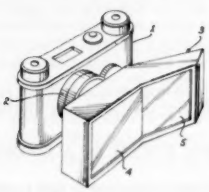
APPARATUS FOR STEROSCOPIC PHOTOGRAPHY

James Ernest Ihms, 1569 W. Hazelwood, Phoenix, Ariz. 85015

Filed July 2, 1973, Ser. No. 375,335

Int. Cl. G03b *35/12*

U.S. Cl. 354—117 **2 Claims**



1. Apparatus for forming a composite image of a given object upon an image recording medium by simultaneously combining a first white light image of the object with a second white light image of the object where said first and second images are angularly displaced from one another, said apparatus comprising:

a. a light reflecting element for reflecting said first image along a light path to intersect the light path of said second image;

b. a light transmissive element disposed at the intersection of said reflected first image and said second image;

c. said transmissive element including a dichroic mirror having a first planar surface set at an angle with respect to the light path of said first reflected image for receiving the totality of said first reflected image and a second planar surface parallel to said first planar surface and set at an angle with respect to the light path of said second image for receiving the totality of said second reflected image such that said first reflected image and said second image enter said transmissive element at opposite sides thereof, said further reflected portions of said reflected first image in combination with said non-reflected portions of said second image forming said composite image;

d. filter means for altering the content of only one of said first and second white light images; and

e. said image recording medium being disposed in the path of said composite image; whereby, said recorded composite image includes said simultaneously received first and second images, each of said first and second images having a full spectrum of color content and portraying two different views of the same object.

3,846,811

FLASH UNIT FOR USE WITH CAMERA

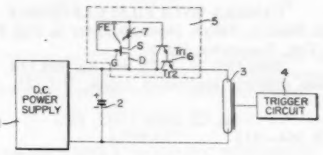
Zenzo Nakamura, Urawa; Takashi Uchiyama, Yokohama; Tetsuya Taguchi, Kawasaki, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1973, Ser. No. 344,467

Claims priority, application Japan, Mar. 29, 1972, 47-31343; Apr. 20, 1972, 47-39957

Int. Cl. H05b *41/38*

U.S. Cl. 354—145 **14 Claims**



1. A flash unit for cameras comprising

a. a DC power supply for supplying a high DC voltage,

b. at least one flash lamp provided with an auxiliary or trigger electrode arranged in circuit for application of a trigger pulse thereto and an anode and a cathode arranged in circuit for application of a discharge current thereto, and

c. a constant current circuit means interconnected in series between said DC power supply and said at least one flash lamp for maintaining the current supplied from said DC power supply to said at least one flash lamp at a constant level for a period of time after application of a triggering pulse as aforesaid.

3,846,812

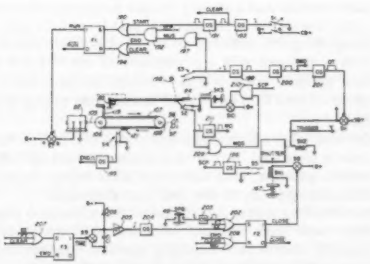
AUTOMATIC ELECTRONIC FLASH CAMERA

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 20, 1973, Ser. No. 426,966

Int. Cl. G03b *15/05, 17/52, 1/12*

U.S. Cl. 354—145 **13 Claims**



1. In combination with a camera having an electric film transport motor; an electronic flash unit, said flash unit com-

prising a storage capacitor, means responsive to an applied voltage for charging said capacitor, a gas discharge tube, and circuit means responsive to an applied trigger signal for discharging said capacitor through said discharge tube to produce an illuminating flash of light; a pair of terminals adapted to be connected to a source of voltage; first switching means operable to first and second states, circuit means closed by said first switching means in its first state for connecting said terminals to said film transport motor to operate said motor when said terminals are connected to a source; second switching means operable to first and second states, circuit means closed by said second switching means in its first state for connecting said terminals to said capacitor charging means, means effective when said first switching means is in its second state for setting said second switching means to its first state, and means responsive to the discharge of said capacitor through said tube for setting said second switching means to its second state.

3,846,813
CAMERA WITH FILM CARTRIDGE

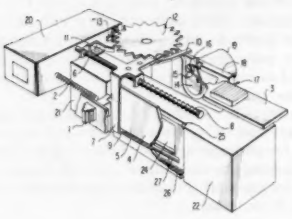
Shigeru Oshima, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 24, 1973, Ser. No. 409,118

Claims priority, application Japan, Oct. 25, 1972, 47-106972

Int. Cl. G03b 17/42, 1/22

U.S. Cl. 354—213 **5 Claims**



1. A photographic camera adapted to receive a film cartridge in which a film having one perforation per frame is loaded comprising;

a rail stationarily provided in the camera extending parallel to the film feed direction,

a lever with a claw slidably and rotatably mounted on said rail,

said lever with said claw being slidable between a film feed start position and a shutter release position and normally urged toward the start position, said lever with said claw being swingable between an engaging position where said claw is engaged with a perforation of the film and a release position where said claw is released from said perforation of said film and urged toward said engaging position,

a film feed lever which is engagable with said lever with said claw to slide said lever with said claw toward said shutter release position, said film feed lever being urged in a direction opposite to the film feed direction,

a claw holding means which holds said claw in a position where said lever with said claw is in said shutter release position and in said engaging position overcoming the force urging said lever toward said start position,

a shutter blade provided behind the taking lens of the camera and urged to the closed position,

a shutter release member provided on said lever with said claw which opens said shutter blade when said lever with said claw moves from said shutter release position to said start position, and

a shutter button movable up and down and urged to move upward and provided above said shutter release position of said lever with said claw so that said shutter button may be engaged with said lever with said claw and swing said lever with said claw from said engaging position to said release position when said shutter button is depressed,

whereby said lever with said claw is slid back to said start position when the lever with said claw is swung to said release position and releases said shutter on the way back to said start position.

3,846,814
ELECTRICAL EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERAS

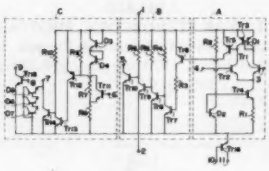
Koutaro Yata, and Masayoshi Sahara, both of Osaka-fu, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 230,294, Feb. 29, 1972, abandoned. This application July 23, 1973, Ser. No. 381,393

Claims priority, application Japan, Mar. 6, 1971, 46-11593; Apr. 10, 1971, 46-26599

Int. Cl. G03b 7/08

U.S. Cl. 354—226 **9 Claims**



1. A universal circuit module adaptable for automatic exposure control of different types of camera shutter mechanisms, comprising:

a pair of common terminals for connection to a power source;

first switching means connected to said common terminals and comprising:

first and second input terminals and a first output terminal adapted to receive a load, means for generating a signal in response to an input signal between said first and second input terminals, and means responsive to said signal for supplying electrical energy to said first output terminal with said load connected thereto; said circuit module further comprising:

second switching means comprising:

semiconductor switch means having a third input terminal adapted to at least be connected to said first ouput terminal, and a second output terminal adapted to receive a second load, said semiconductor switch means providing electrical energy to said second output terminal with said second load connected thereto;

a third output terminal;

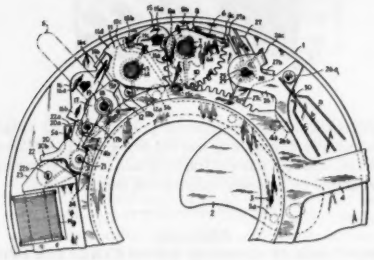
means for supplying electrical energy to a third output terminal adapted to receive a third laod and adapted to be responsive to the actuation of said semiconductor switch means; and said circuit module further comprising: biasing means connected to said common terminals and having a third output terminal for biasing said semiconductor switch means whereby said semiconductor switch means may be actuated when the voltage at said third input terminal is one-half of the voltage of said power source.

3,846,815

POWER SWITCH CONTROL IN ELECTRIC SHUTTER

Kiyoshi Kitai, Tokyo; Yukio Nakamura, Chiba; Hiroaki Ishida, Chiba, and Shinji Nagaoka, Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,182
Int. Cl. G03b 9/08
U.S. Cl. 354—234 2 Claims



1. An electric shutter comprising, a plurality of shutter blades operable from a closed position to an open position and back to the closed position, means for opening and closing the shutter blades, an exposure time control circuit for controlling closing of the shutter blades having a power source, an electromagnet and a power switch operable to a closed position for placing the power source in circuit for energizing the electromagnet and an open position, means to de-energize the electromagnet when an exposure time terminates, a switch lever for operating the power switch to said closed position, a switch interlocking lever engaged with the switch lever and coaxial therewith for operating the switch to an open position and returning the switch lever to a position of readiness for closing the power switch, and travelling means controlled by said means to open and close the shutter blades travelling ahead of the opening of the shutter blades to actuate said switch lever to said closed position to energize said electromagnet and travelling ahead of the closing of the shutter blades to actuate said switch interlocking lever to open said power switch.

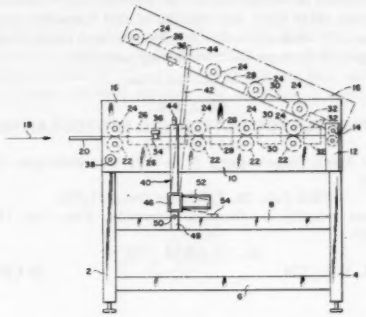
3,846,816

PRINTING PLATE PROCESSOR AND MEANS FOR OPENING AND CLOSING THE SAME

Eugene J. Gaisser, Sparta, N.J., assignor to American Hoechst Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 191,192, Oct. 21, 1974, abandoned. This application Apr. 10, 1973, Ser. No. 349,736
Int. Cl. G03b 17/56
U.S. Cl. 354—307 10 Claims

1. A printing plate processor for a plate coated and imaged on both sides or a pair of plates, in back-to-back relation, coated and imaged on one side only and wherein said plate travels through said processor along a straight line path, comprising a fixed lower section and a pivotal upper section, pivotally mounted on said lower section adjacent one end thereof; said upper section and said lower section being separated along a plane coincident with the path of travel of said plate through said processor; a pair of feed roller means, a pair of discharge roller means and a pair of processing means adapted to contact both sides of said plate and subject said both sides of said plate to identical mechanical action; one each of said pairs of feed means, discharge means and processing means being mounted in said lower section and the other of said pairs being mounted in said upper section; and extension jack means, having one end thereof attached to said lower section and the other end thereof attached to said upper section, to lower and raise said upper section, maintain proper



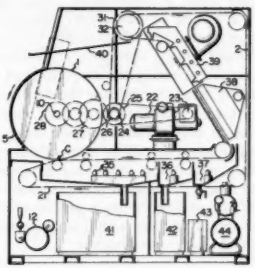
alignment between said sections during opening and closing and apply a predetermined pressure to said plate when said processor is closed and said plate is being processed.

3,846,817

APPARATUS FOR CONVEYING SYNTHETIC RESIN-MADE ARTICLES IN THE SHEET FORM

Takao Yamada, Kawasaki, and Kiyoshi Sunakawa, Yamato, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Toshiba Machine Co., Ltd., Tokyo, both of, Japan

Filed Aug. 31, 1973, Ser. No. 393,366
Claims priority, application Japan, Sept. 4, 1972, 47-88462
Int. Cl. G03d 3/08
U.S. Cl. 354—319 2 Claims



1. An apparatus for conveying synthetic resin-made articles in the sheet form, comprising

a rotatably supported drum provided at the peripheral surface with vacuum suction apertures for retaining a synthetic resin-made, sheet-like article on said surface and also provided at the periphery of the end portions with annular grooves, and

a pair of endless chains continuously movable through a transferring position under and near the end portions of said drum at a predetermined speed and having needle-like projections thereon at a predetermined spacing, which projections are capable of insertion through said sheet-like article at both the edges into said grooves of the drum while terminating the vacuum suction during the passage of said article through the transferring position whereby said article is transferred from said drum to said chains,

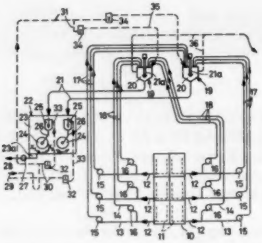
said drum being started to rotate at a peripheral speed equal to the travelling speed of said chains when one of the projections contacts a limit switch disposed at a predetermined position to close it prior to the arrival of the forward end of said article at the transferring position and, on the other hand, the rotation of said drum being automatically discontinued when the rear end of said article is passed through the transferring position.

3,846,818

APPARATUS FOR DEVELOPING PHOTOGRAPHIC MATERIALS

Werner Merz, Napoleonweg 3, D-7011 Oberelchingen, Germany

Filed Feb. 12, 1973, Ser. No. 331,986
Claims priority, application Germany, Feb. 16, 1972, 2207137
Int. Cl. G03d *3/02*
U.S. Cl. 354—324 **28 Claims**



1. In an apparatus for developing photographic materials, particularly color films, a combination comprising a film developing unit; a source of developer; supplying means for supplying metered quantities of developer from said source to said unit; selecting means operatively associated with said supplying means for selecting the magnitude of said metered quantities; sensing means for sensing the developer content in said supplying means and for controlling operation of said supplying means in dependence upon the sensed content and within the magnitude selected by said selecting means; and signal-generating means for generating a control signal for controlling the inflow of medium into said unit in response to the contents of said unit exceeding a predetermined level, and for also generating a warning signal at least substantially simultaneously with said control signal.

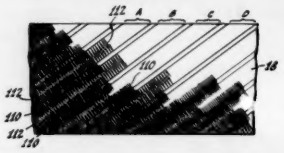
3,846,819

METHOD FOR RECORDING TWO SEPARATE SIGNALS

Henry Ray Warren, Indianapolis, Ind., assignor to RCA Corporation, New Yok, N.Y.

Division of Ser. No. 778,912, Nov. 1, 1968, Pat. No. 3,542,946, which is a continuation-in-part of Ser. No. 627,468, March 31, 1967, abandoned. This application June 29, 1970, Ser. No. 50,646
Int. Cl. H04n *5/78*
U.S. Cl. 360—19 **9 Claims**

1. A method of recording two separate signals of respectively long and short wavelength frequency content on a tape record having a magnetizable coating comprising the steps of: recording the long wavelength frequency signals substantially into the thickness of the magnetizable tape coating and sequentially in a first group of parallel aligned tracks on said tape, adjacent pairs of tracks in said first group being separated by a first guard band therebetween, and then recording the short wavelength frequency signals substantially into the surface layer of said magnetizable coating and sequentially in the second group of parallel aligned tracks on said tape, each of the tracks in said second



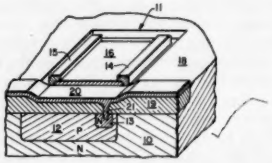
group encompassing different portions of two adjacent tracks in said first group and the first guard band therebetween, adjacent pairs of tracks in said second group being separated by a second guard band therebetween.

3,846,820

MOSAIC FOR IR IMAGING USING PYROELECTRIC SENSORS IN A BIPOLAR TRANSISTOR ARRAY

Donald R. Lampe, Ellicott City, and Edgar L. Irwin, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1973, Ser. No. 373,725
Int. Cl. H01l *17/00*
U.S. Cl. 357—31 **11 Claims**



1. An integrated array of pyroelectric sensors responsive to incident IR radiation comprising:

a plurality of pyroelectric sensors arranged in the form of a column such that a plurality of said columns defines an array of said sensors each for thermal transformation of incident IR radiation into an electrical charge proportional thereto;

an integrated circuit supporting said sensors including a reverse-biased P-N junction for integration of said electrical charge from each of said pyroelectric sensors; and

emitter means electrically joined to one member forming said P-N junction for detecting the integrated electrical charge stored by said reverse-biased P-N junction.

3,846,821

LATERAL TRANSISTOR HAVING EMITTER REGION WITH PORTIONS OF DIFFERENT IMPURITY CONCENTRATION

Minoru Nagata, and Kozi Sato, both of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

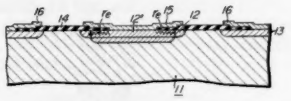
Division of Ser. No. 772,913, Nov. 4, 1968, Pat. No. 3,652,347. This application Feb. 9, 1971, Ser. No. 114,021
Claims priority, application Japan, Nov. 6, 1971, 46-70971
Int. Cl. H01l *29/72*
U.S. Cl. 357—35 **10 Claims**

1. A lateral transistor comprising:

a semiconductor substrate of a first conductivity type;

a first diffused region of a second conductivity type with a relatively high impurity concentration formed in one principal surface of said substrate;

a second diffused region of the second conductivity type with a relatively low impurity concentration formed at least in one portion of said first diffused region and in one portion of said substrate adjacent thereto;



a third diffused region with an impurity concentration distribution the same as that of said second diffused region formed in said principal surface of said substrate near the second diffused region, the distance between said second and third diffused regions being defined shorter than the diffusion length of a minority carrier in said substrate; and an emitter, a collector and a base electrode connected to the first region, the third region and the substrate, respectively.

3,846,822

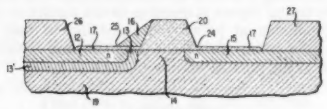
METHODS FOR MAKING FIELD EFFECT TRANSISTORS

Terence James Riley, Warren, and Peter William Shackle, Sommerville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1973, Ser. No. 403,918

Int. Cl. H01l *11/00*

U.S. Cl. 357—23 **12 Claims**



1. In a method for making a field effect transistor comprising the steps of forming source, channel, drift and drain regions, and a gate electrode overlying the channel region, the improvement comprising the steps of:

forming an oxide mesa over the drift region portion of a semiconductor wafer;

defining the gate electrode on one side of the mesa by shadow masking, said defining step comprising the step of irradiating the mesa at an angle;

and using one side of the mesa to define one boundary of the drain region and one side of the gate electrode to define one boundary of the source region.

3,846,823

SEMICONDUCTOR ASSEMBLY

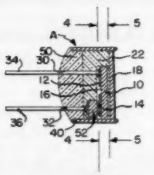
Benjamin H. Matthews, Peninsula, and Jules W. Rhine, Bedford, both of Ohio, assignors to Lucerne Products, Inc., Northfield, Ohio

Continuation of Ser. No. 169,255, Aug. 5, 1971, abandoned. This application June 1, 1973, Ser. No. 366,051

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—74 **14 Claims**

1. A semiconductor assembly comprising a semiconductor device having a predetermined peripheral shape, a nonconducting ceramic body defining a fixture for said assembly and having opposite faces, a shaped recess in one face thereof configured to closely conform to the peripheral shape of said semiconductor device, a cathode electrode and a spaced gate electrode on one side of said semiconductor device, an anode electrode on the other side of said semiconductor device, an electrical lead bonded to each of said gate and cathode electrodes, openings extending through said body from said shaped recess and through to the other face thereof, said semiconductor device being received in said recess and presenting a substantially flush surface at said one face, said electrical leads extended through said openings, a cup-shaped,



one-piece metallic cap having a substantially flat end wall and an integral, upstanding side wall defining a cavity, said body and said semiconductor device fitted in said cavity in said cap with said anode electrode in engagement with said cap end wall, and an encapsulating compound secured in the cavity in the cap outwardly of the body to retain the assembled body, electrical leads, and semiconductor device in the cap, said ceramic body thus serving as a fixture for the electrical leads and semiconductor device in the cap whereby the semiconductor assembly can be easily and quickly fabricated under high speed production line conditions.

3,846,824

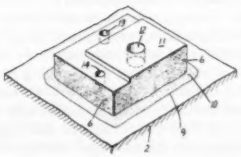
IMPROVED THERMALLY CONDUCTIVE AND ELECTRICALLY INSULATIVE MOUNTING SYSTEMS FOR HEAT SINKS

Gordon M. Bell, Fort Wayne, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed June 13, 1973, Ser. No. 369,700

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—80 **14 Claims**



1. An apparatus for mounting at least one electrical device to

a supportive surface comprising:

a heat sink for dissipating thermal energy;

means for mounting at least one electrical device to said heat sink; said heat sink having a first portion disposed toward said supportive surface; said first portion having a coating of a material exhibiting a high degree of electrical insulation and a high degree of thermal conductivity; an adhesive material situated between said coating on said first portion of said heat sink and a corresponding portion of said supportive surface for providing a mechanical bond between said heat sink and said supportive

surface, said adhesive material exhibiting a high degree of electrical insulation and a high degree of thermal conductivity.

3,846,825

SEMICONDUCTOR DEVICE HAVING CONDUCTING PINS AND COOLING MEMBER

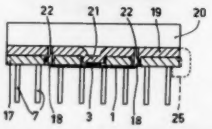
Herman Budde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 219,479, Jan. 20, 1972, abandoned. This application June 13, 1973, Ser. No. 370,476

Claims priority, application Netherlands, Feb. 5, 1971, 7101600

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—81 **8 Claims**



1. A semiconductor device comprising:

a. an electrically insulating support plate having oppositely disposed first and second major surfaces, said plate comprising an aperture;

b. a pattern of metal conductors disposed completely at said first major surface;

c. current supply pins mounted on said support plate and having at least one thereof extending completely therethrough so as to be accessible from said second surface, said pins projecting orthogonally in the same direction from said first major surface, said pins being electrically and mechanically connected directly to respective parts of said metal conductors and extending a substantial distance from said first major surface so as to be available for making external electrical connections to said metal conductors;

d. a semiconductor body comprising contact places, said semiconductor body being disposed in said plate aperture;

e. a flexible electrically insulating foil of synthetic material;

f. metal conductor tracks disposed on a first foil face and individually defining proximate and distal end portions, said distal end portions being spaced closer to the periphery of said foil, said semiconductor body being mounted on said foil with its contact places being disposed on and in electrical contact with respective proximate end portions of said metal conductor tracks, said foil being disposed on said first major surface and lying wholly between the pins with the distal end portions being disposed on and in electrical contact with respective ones of said metal conductors and with the body being spaced from said second major surface, whereby said external electrical connections are made to said body and the opposite face of said foil is in overlying protective relationship to the body; and

g. a cooling member connected to said support plate, said cooling member extending over at least a part of said second major surface of said support plate and comprising a projecting part which extends into said aperture of said support plate and engages the rear side of the semiconductor body in thermally conductive fashion.

ERRATUM

For Class 358—47 see:
Patent No. 3,846,579

3,846,826

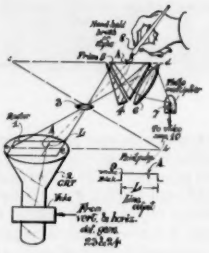
DIRECT TELEVISION DRAWING AND IMAGE MANIPULATING SYSTEM

Robert E. Mueller, Britton House, Roosevelt, N.J. 08558

Continuation-in-part of Ser. No. 171,155, Aug. 12, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,874

Int. Cl. H04n *9/02*

U.S. Cl. 358—81 **11 Claims**



1. In a real-time television drawing system comprising

means to scan over a given area in synchronism with a television timing signal;

means to produce a plurality of image points within said given area;

means to produce electrical signals in response to said image points;

means for generating a plurality of voltages capable of changing said scan in toto according to various patterns;

means for superimposing said voltages selectively on said scanning means;

means including a display system synchronized to said television timing signals responsive to the electrical signals, for producing at points corresponding to said image points the pattern selected during the time of each produced image points.

ERRATUM

For Class 360—19 see:
Patent No. 3,846,819

3,846,827

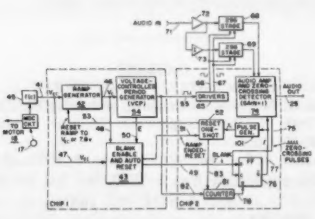
SPEECH COMPRESSOR-EXPANDER WITH SIGNAL SAMPLE ZERO RESET

William G. Eppler, Jr., Westport, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.

Filed Feb. 12, 1973, Ser. No. 331,536

Int. Cl. G11b *5/02, 27/18*

U.S. Cl. 360—26 **4 Claims**



1. In a speech compression-expansion system having variable delay line means repetitively varied to provide frequency

transformation of signals passing through the line the combination comprising:

means for sensing zero crossing points on said signal at the output of said line;

enabling means for establishing an interval at the end of each repetitive variation;

blanking means responsive to detection of a zero crossing within said interval and if no such zero crossing is detected responsive to the end of said interval for blanking the output of said line; and

means responsive to the inititiation of said blanking for resetting said variation to start the next repetitive variation of said line.

3,846,828

HIGH SOLIDS CONTENT VINYLIDENE CHLORIDE POLYMER DISPERSIONS IN STRONGLY HYDROGEN BONDED DISPERSING MEDIA AND PROCESS OF PREPARATION THEREOF

Dieter H. Klein, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 4, 1973, Ser. No. 347,828

Int. Cl. C08f *45/24, 45/34*

U.S. Cl. 260—33.4 R **10 Claims**

1. Dispersions of normally crystalline vinylidene chloride polymers containing from about 70 to 95 percent by weight of vinylidene chloride in a strongly hydrogen bonded dispersing media said dispersions containing about 0.1 to 20 percent based on polymer solids of a dispersion stabilizer consisting essentially of the reaction product of (A) tripropylene glycol methylether acrylate and (B) at least one reactive comonomer capable of forming a side chain on said stabilizer which side chain is insoluble in the hydrophilic liquid and associated with said vinylidene chloride polymer, and wherein the mass ratio of (A) to (B) is from about 99:1 to 80:20.

3,846,829

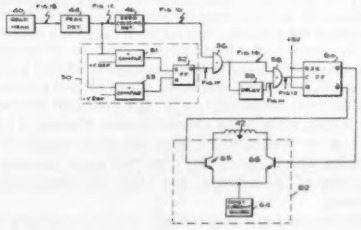
READ-WRITE SERVO TRACK COPY SYSTEM

Frank W. Lin, Cupertino, Calif., assignor to Caelus Memories, Inc., San Jose, Calif.

Filed Nov. 6, 1972, Ser. No. 303,794

Int. Cl. G11b *5/44*

U.S. Cl. 360—46 **8 Claims**



1. In combination with a read head means adapted to sense discrete relatively short designations in a magnetized track wherein the track is magnetized in a first direction and the designations are magnetized in a second direction, said read head means providing for each designation a signal with an amplitude which first varies from a zero reference level in a first direction, toward a first peak, thereafter crosses said zero reference level and then varies from the zero reference level in a second direction toward a second peak and returns to said zero reference level to thereby form said first and second peaks of opposite polarities, with respect to said zero reference level, the combination comprising:

a zero crossing detector for providing a first pulse when the amplitude of said signal first varies from said zero reference level in said first direction and a second pulse when said signal amplitude crosses said zero reference level and varies in said second direction;

first means for establishing a time interval which extends from the time when the amplitude of said signal first equals a first reference amplitude which is between said zero reference level and said first peak to the time when the amplitude of said first signals equals a second reference amplitude, which is between said zero reference level and said second peak, said first and second reference amplitudes having opposite polarities with respect to said zero reference level;

gating means coupled to said zero crossing detector and to said first means, said gating means being enabled only during said time interval for providing a first control pulse only in response to said second pulse from said zero crossing detector with said gating means being inhibited from providing a pulse corresponding to said first pulse;

delay means responsive to said first control pulse for providing a second control pulse delayed by a fixed time period from said first control pulse; and

utilization means for utilizing said first and second control pulses.

3,846,830

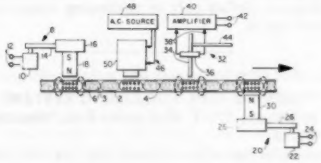
RECORDING AND PLAYBACK APPARATUS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 191,177, Oct. 21, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,710

Int. Cl. G11b *5/78*

U.S. Cl. 360—56 **10 Claims**



1. A recording apparatus for recording on a recording medium having a suspension of force field responsive and selectively alignable particles therein comprising:

first means for producing a confined force field perpendicular to a recording surface of said recording medium and within said suspension of particles,

means for selectively energizing said first means to selectively produce an alternating force field as said confined force field to align said particles therewith,

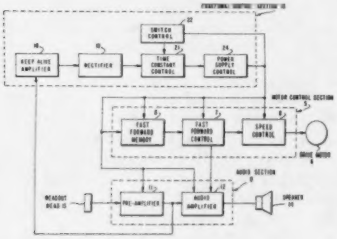
second means for producing a second confined force field perpendicular to the recording surface of said recording medium and within said suspension of particles, said second means being spaced from said first means along said recording medium, and,

second means for selectively actuating said second means for producing to selectively produce a unidirectional force field as said second confined force field to align said particles therewith, said particles exhibiting a net remanent field in response to said unidirectional force field and a substantially zero net remanent field in response to said alternating force field.

3,846,831
SOUND REPRODUCING APPARATUS IN WHICH THE DRIVE MEANS OPERATES IN RESPONSE TO A PRERECORDED CONTROL SIGNAL

Clark E. Johnson, Jr., Weston, and Peter L. Richman, Lexington, both of Mass., assignors to Micro Communications Corporation, Waltham, Mass.

Filed Mar. 7, 1973, Ser. No. 338,733
Int. Cl. G11b 27/22, 23/18, 23/16
U.S. Cl. 360—74 5 Claims



1. Signal reproduction means for reproducing intelligence signals within a pre-selected frequency range in response to a control signal having a major frequency component outside said range, said signals being recorded on a record medium, comprising:

first detecting means for detecting said control signal;

second detecting means for detecting said intelligence signals;

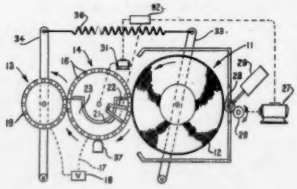
intelligence signal reproducing means for reproducing said intelligence signals on said record medium; and

operating means responsive to said control signal for controlling said intelligence signal means to reproduce said intelligence signals only in continuing response to said control signal.

3,846,832
VACUUM TAPE THREADING SYSTEM

Konrad A. Krause, 870 E. El Camino Real, Mountain View, Calif. 94040

Continuation-in-part of Ser. No. 843,452, July 22, 1969, Pat. No. 3,643,889. This application Dec. 3, 1971, Ser. No. 204,524
Int. Cl. G11b 15/32
U.S. Cl. 360—85 10 Claims



1. A tape transport system for tape apparatus having a record reproduce head and a tape supply reel with drive means for rotating the reel comprising,

a rotatably mounted disc having vacuum openings in the periphery thereof,

said disc having a stationary portion and at least one rotatable portion,

vacuum connections to said disc for drawing a vacuum through said peripheral openings to hold tape against the disc,

tape end sensing means disposed in the stationary portion of said disc directed toward said tape supply reel and producing a signal upon passage of a free tape end thereover,

said drive means initially rotating said supply reel in the tape wind direction to thus pass the free tape end over said sensing means,

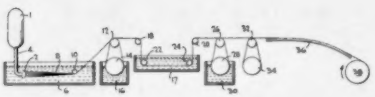
means applying the tape end sensing signal to said drive means for reversing the drive means to rotate the supply reel in a taped unwind direction, and

resilient means urging said disc and supply reel with the tape thereon into peripheral engagement for rotating the disc by rotation of supply reel whereby tape on the reel is unreeled by the disc and passed over said head.

3,846,833
ACRYLIC FILAMENTS WHICH ARE PARTICULARLY SUITED FOR THERMAL CONVERSION TO CARBON FILAMENTS

Michael J. Ram, West Orange, and John P. Riggs, Berkley Heights, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 28,545, April 14, 1970, Pat. No. 3,657,409. This application Apr. 17, 1972, Ser. No. 244,541
Int. Cl. C08f 3/74, 15/22
U.S. Cl. 260—88.7 R 2 Claims



1. An improved acrylic filament which is particularly suited for thermal conversion to a carbon filament formed in accordance with the process comprising:

a. providing a spinning solution having a low shear viscosity of about 125 to 1,500 poise measured at 25°C. comprising (1) a fiber-forming acrylic polymer in a concentration of about 18 to 25 percent by weight based upon the total weight of the solution selected from the group consisting of an acrylonitrile homopolymer and an acrylonitrile copolymer which contains at least about 85 mol percent of acrylonitrile units and up to about 15 mol percent of one or more monovinyl units copolymerized therewith, (2) lithium chloride in a concentration of about 0.1 to 5 percent by weight based upon the total weight of the solution which lowers and preserves upon standing the viscosity of the solution, and (3) a dimethylacetamide solvent,

b. extruding said spinning solution into an essentially non-aqueous coagulation bath having a temperature of about 10° to 35°C. consisting essentially of about 55 to 85 percent by weight of ethylene glycol and about 15 to 45 percent by weight of dimethylacetamide to form an as-spun filament which is present in said coagulation bath for a residence time of about 6 to 300 seconds,

c. washing the resulting as-spun filament in water to remove dimethylacetamide and lithium chloride from the same, the said washing being initially conducted for at least 25 seconds with said water at a temperature of about 10° to 50°C., and

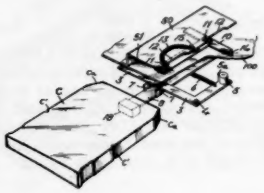
d. drawing said washed filament to increase the orientation thereof.

3,846,834

CARTRIDGE LOCKING AND EJECTING MECHANISM

Shinji Nakamori, Soka, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed May 1, 1972, Ser. No. 248,807
Claims priority, application Japan, Apr. 30, 1971, 46-33651
Int. Cl. G11b 5/00, 15/32, 23/04
U.S. Cl. 360—93 10 Claims



1. A notched cartridge locking and ejecting mechanism consisting of a deck having a motor, capstan, and reproducing head,

a cartridge supporting mechanism forming a receiving area for said cartridge.

a pair of locking arms arranged on said cartridge supporting mechanism and provided with an elastic material, the end portions of said arms projecting into said receiving area, and

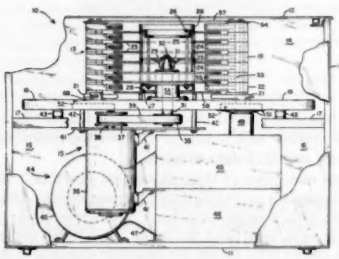
an ejecting mechanism engaging at the ends of said locking arms and having a return action with said elastic material; wherein said arms are being equipped with supporters capable of fitting into notches in the sides of the cartridge, whereby when the cartridge is inserted said supporters fit into said notches to hold the cartridge and said ejecting mechanism is operated to retract said supporters from said notches of the cartridge.

3,846,835

CLEAN AIR SYSTEM FOR MAGNETIC STORAGE DISK PACK

Beatrice Horovitz, Philadelphia, and Michael Gary Savage, Warminster, both of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 29, 1973, Ser. No. 365,007
Int. Cl. G11b 23/04; B01d 46/00
U.S. Cl. 360—98 14 Claims



1. An open shroud clean air system for a plurality of magnetic memory disks, comprising:

a source of clean filtered air comprising a blower and an absolute filter system,

a plurality of magnetic disks of the type having memory tracks,

said disks being spaced apart one from another by an imperforate cylindrical wall,

read-write head means extending between said spaced apart disks and supporting flying read-write heads thereon,

conduit means connected to said source of clean filtered air and extending inwardly between adjacent pairs of magnetic disks immediately upstream of said read-write heads,

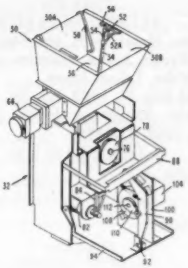
said conduit means comprising an outlet stream of clean filtered air supplied to a point radially inward of said memory tracks for maintaining continuous clean air flow at said read-write heads whereby said read-write heads are supported in a boundary layer consisting entirely of said clean filtered air.

3,846,836

LOADING AND UNLOADING MECHANISM FOR FLEXIBLE MAGNETIC DISKS

Philip R. Masse; William J. Pendy, and William S. Wentink, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1973, Ser. No. 393,246
Int. Cl. G11b 17/00
U.S. Cl. 360—98 13 Claims



1. A recording system utilizing record disks adapted to have information recorded on faces thereof and comprising a stationary support, a drive member rotatably mounted in said support and adapted to have engagement with a record disk for driving the disk for transfer of information to or from the disk, motor means for rotatably driving said drive member and thereby driving a record disk in engagement therewith, means for moving one of said disks onto said drive member prior to an information transfer operation and then off of said drive member after an information transfer operation has taken place and including a friction drive roll located to the side of said drive member and frictionally driving the disk in a direction laterally of the disk, and reversible motor means drivingly connected with said friction drive roll for driving the friction drive roll in one direction or the other so as to thereby move the disk laterally onto and off of said drive member.

3,846,837

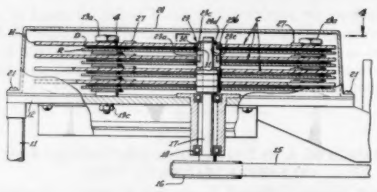
STACKED FLEXIBLE DISC UNIT WITH HEAD PLUGS

James O. Jacques, Longmont, Colo., assignor to Intelligent Memory Systems, Inc., Santa Ana, Calif.

Filed June 20, 1973, Ser. No. 371,858
Int. Cl. G11b 5/60
U.S. Cl. 360—99 20 Claims

1. In flexible disc magnetic storage apparatus: a base support, a rotatable shaft projecting upwardly from said base, means for rotating said shaft, and flexible disc storage means disposed about said shaft, said storage means including at least one cartridge unit including a printed circuit head board

having a transducer head projecting below said head board, a rest plate below said head board, means supporting said head board and said rest plate on said base plate in vertically spaced relation, a flexible magnetic storage disc disposed between said head board and said rest plate, said disc having a hub on said shaft and rotatable therewith, and said head board and



said rest plate having air inlet openings adjacent to said hub for admitting air to the spaces between said head board, said rest plate and said disc.

3,846,838

SELECTION DEVICE

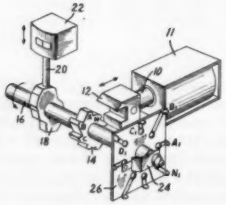
Haruki Okamoto; Masaki Sato, and Shunichi Kusaka, all of Amagasaki, Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 22, 1969, Ser. No. 843,375

Claims priority, application Japan, July 22, 1968, 43-51771; Nov. 5, 1968, 43-80796

Int. Cl. G11b *5/56*

U.S. Cl. 360—106 **4 Claims**



1. A selection device comprising, in combination, a controlled member for being selectively set to any one of a plurality of predetermined positions, an astable multivibrator having an output terminal for producing an alternating output signal, a plurality of selection switch contacts one for each of the predetermined positions of said controlled member, means connecting said selection contacts to said multivibrator, contact means for selective engagement with any one of said selection contacts to cause energization of said multivibrator, electrically actuated rotatable driving means coupled to said multivibrator output terminal for advancing said controlled member sequentially from one position to the next in response to each alternation of the output signal, a rotatable switch contact, means mounting said rotatable switch contact for sequentially sweeping said selection switch contacts, and means coupling said rotatable switch contact to said multivibrator for deenergizing said multivibrator when said rotatable switch contact closes against one of said selection contacts engaged by said contact means.

3,846,839

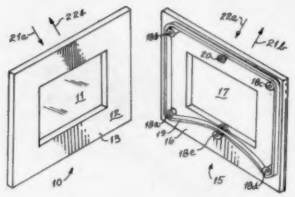
MECHANICAL SCANNER

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed June 25, 1973, Ser. No. 372,908

Int. Cl. G11b *5/48*

U.S. Cl. 360—108 **15 Claims**



1. In a mechanical scanner for transporting a head:

endless means comprising in combination:

an insulating endless belt; and

electrically conductive endless members integral with said insulating endless belt, said electrically conductive endless members having partially exposed portions.

3,846,840

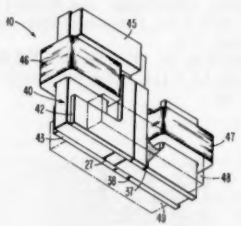
READ/WRITE AND LONGITUDINAL EDGE ERASE HEAD ASSEMBLY HAVING MULTIPLE SIMILARLY SHAPED LAYERS

William Walter Childers; Karl Heinz Elser, both of San Jose, and Phillip John Peterson, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1973, Ser. No. 387,564

Int. Cl. G11b *5/26*

U.S. Cl. 360—118 **5 Claims**



1. A magnetic head assembly for recording or reading data and for erasing edge portions of newly-recorded data and previously recorded data comprising:

at least one group of three like layers joined in a sandwich structure for recording or reading and erasing data associated with a single data track, the center layer being a read-write layer, and the outer layers being erase layers, the center layer facing in a direction opposite to the outer layers;

each layer having a magnetic core portion having a transducing gap said magnetic core portion having two legs separated by said transducing gap, said gap being formed by a nonmagnetic spacer portion joined to one leg of said core, and the axes of said gaps being parallel;

a sidebar bridging the legs of said core portion of said center layer to form a closed magnetic path about said gap;

a first electrical conducting coil disposed about an end leg of the core of said center read-write layer; and

a second electrical conducting coil disposed about the end legs of the cores of the outer erase layers;

each layer having a nonmagnetic portion joined to on one leg of said magnetic core portion, said outer erase layers aligned similarly with respect to each other and opposite to said center read-write layer such that only the nonmagnetic portions contact the magnetic core portion of said center read-write layer.

3,846,841

MULTIPLE MAGNETIC HEAD DEVICES

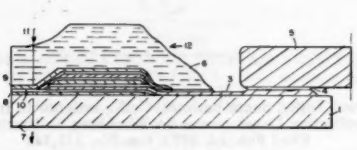
Jean-Pierre Lazzari, Villiers Saint Frederic, and Jean Michard, Orsay, both of France, assignors to Compagnie Internationale Pour L'Informatique, Louveciennes, France

Filed June 25, 1973, Ser. No. 373,461

Claims priority, application France, July 3, 1972, 72.23938

Int. Cl. G11b *5/12, 5/26, 5/20*

U.S. Cl. 360—121 **14 Claims**



1. A read-write magnetic head device comprising in combination:

a. a dielectric, non-magnetic planar substrate;

b. a plurality of planar magnetic head structures having their air gaps aligned on one edge of said substrate, each head including a flat coil;

c. a plurality of coil terminals substantially aligned on an opposite edge of said substrate;

d. a plurality of flat conductors equal in number to said terminals, one soldered to each of said terminals respectively, said conductors having a uniform thickness so that their upper surfaces lie in a common plane parallel to the plane of said substrate;

e. a primary protection formed of a dielectric layer coated over said magnetic head structures, having one surface which is flat and substantially level with but spaced from the upper surfaces of said flat conductors and a second surface joining said first and sloping toward but terminating short of said terminals;

f. a secondary protection formed of a non-magnetic dielectric plate having substantially the same area as said substrate and applied over the upper surfaces of said primary protection and flat conductors; and

g. bonding means between said plate and said primary protection and flat conductors; the materials of said primary and secondary protections having coefficient of thermal expansion substantially equal to that of said substrate.

3,846,842

MAGNETIC TRANSDUCER STRUCTURE

Jean-Pierre Lazzari, Villiers Saint Frederic, France, assignor to Compagnie Internationale Pour L'Informatique, Louveciennes, France

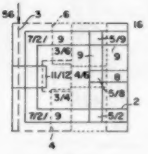
Filed June 25, 1973, Ser. No. 373,460

Claims priority, application France, July 3, 1972, 72.23939

Int. Cl. G11b *5/16, 5/20, 5/22*

U.S. Cl. 360—126 **6 Claims**

1. A magnetic transducer structure formed of a stack of individually shaped thin layers coated on a dielectric nonmagnetic substrate having substantially parallel front and rear edges, the stack comprising a pair of magnetic layers having a front to rear axis of symmetry with respect to the substrate, spaced apart at one end to define an air-gap face end portion adjacent one edge of said substrate and contacting one another at their opposite end portions at a point between the front and rear edges of said substrate, and a flat helix insulated conductor coil at least a part of which surrounds the contacting portions of said magnetic layers wherein a plurality of insulating layers of the stack together define a flat insulating helix having portions of its turns surrounding said contacting portions of said magnetic layers and having portions of its turns positioned between the magnetic layers at the airgap



faces thereof, wherein conductive layers of smaller dimensions in the plane parallel to said substrate are positioned between said insulating layers to define a conductive flat helix embedded within the insulating helix with the exception of rear terminal portions which extend substantially to the rear edge of said substrate, wherein the turns of the insulating helix are in substantially mutual registration and the turns of the conductive helix are also in substantially mutual registration and wherein each one of said insulating and conductive layers in the helixes either has an axis of symmetry coincident with the said front to rear axis of symmetry of the pair of magnetic layers or is a mirror image of another one of the layers with respect to said front to rear axis of symmetry.

3,846,843

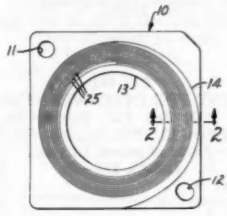
COMPOSITE FILM

Victor R. Franer, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 163,915, July 19, 1971, Pat. No. 3,772,081. This application May 16, 1973, Ser. No. 360,904

Int. Cl. G11b *5/62, 5/82*

U.S. Cl. 360—135 **4 Claims**



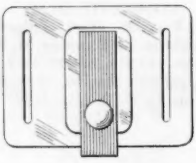
1. A sound disc comprising a flat flexible heat-resistant dimensionally stable support layer, an intermediate layer, said support layer being adherently bonded to one major surface of said intermediate layer, said intermediate layer having a raised spiral pattern on the opposite major surface thereof, said intermediate layer being comprised of an adherent heat softenable pressure formable material having a softening point within a temperature range of 55°C to 90°C and being free of magnetically susceptable material, and a thin layer of magnetically susceptible material dispersed in a non-magnetic binder adherently bonded in substantially uniform thickness to said opposite major surface.

DESIGNS

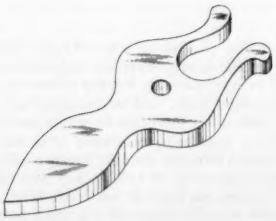
NOVEMBER 5, 1974

233,489
ENSEMBLE INCLUDING BLOUSE AND PANTY HOSE
Joyce Curry, Suitland, Md. (2300 S. 24th Road, Apt. 730, Arlington, Va. 22206), and Martha G. Pugh, 11 New Providence Ave., Summit, N.J. 07901
Filed Apr. 2, 1971, Ser. No. 130,867
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—29

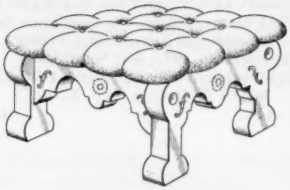
233,490
BELT ATTACHABLE FLASH LIGHT HOLDER
Robert A. Bailey, 2339 E. 12th St., Des Moines, Iowa 50316
Filed Sept. 21, 1972, Ser. No. 290,842
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



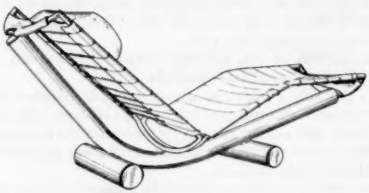
233,491
IMPLEMENT FOR INTERWEAVING BRAID
Hope Hanley, P.O. Box 537, Purcellville, Va. 22132
Filed Feb. 13, 1973, Ser. No. 331,737
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D3—19 A



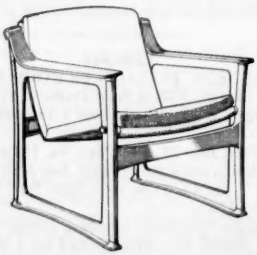
233,492
HASSOCK
Evalin S. Gilbert, 2121 N. Bay Shore Drive, Miami, Fla. 33137
Filed Nov. 20, 1972, Ser. No. 308,042
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36



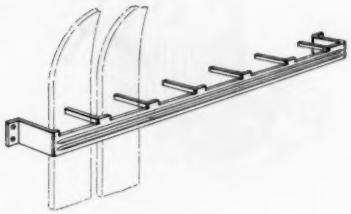
233,493
CHAISE LONGUE
Paul Tuttle, Santa Barbara, Calif., assignor to Intercollection Development SA Kirchberg, Switzerland
Filed Feb. 14, 1973, Ser. No. 332,342
Claims priority, application Switzerland Sept. 4, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38



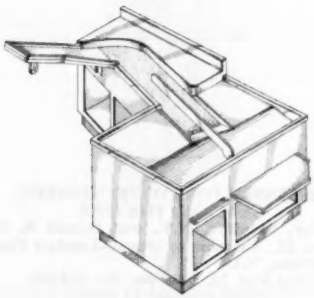
233,494
ARMCHAIR
Imre Bolyos, 25 Kevingeringen, S–182, 33 Danderyd, Sweden
Filed Oct. 18, 1972, Ser. No. 298,553
Claims priority, application Sweden Apr. 18, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



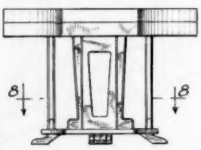
233,495
SKI STORAGE RACK
Salvatore Laterra, Providence, R.I., assignor of a fractional part interest to Norma Hines, Attleboro, Mass.
Filed Apr. 9, 1973, Ser. No. 348,964
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



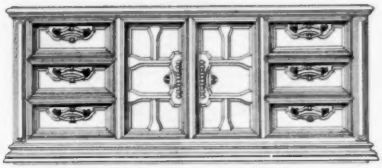
233,496
BAGGER STATION OR SIMILAR ARTICLE
John David Hunt, Turnersville, N.J., assignor to RCA Corporation
Filed July 12, 1973, Ser. No. 378,518
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—143



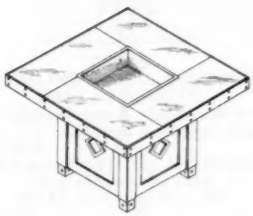
233,497
CONVERTIBLE GAME TABLE
Philip Zelkowitz, Lincolnwood, Ill., assignor to Armac Enterprises, Inc., Chicago, Ill.
Filed July 24, 1972, Ser. No. 274,185
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—149



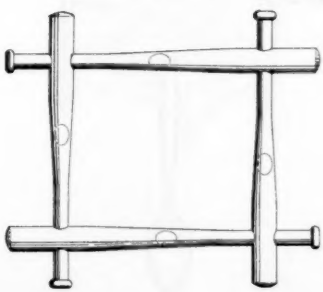
233,498
DRESSER OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to The Vaughan Furniture Company, Inc., Galax, Va.
Filed Jan. 17, 1973, Ser. No. 324,555
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



233,499
RESTAURANT DINING TABLE
James T. Sakata, 653 20th Ave., San Francisco, Calif. 94121
Filed July 2, 1971, Ser. No. 159,163
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



233,500
BALL BAT PICTURE FRAME
David A. Phillips, Box 101, Coppell, Tex. 75019
Filed Oct. 10, 1972, Ser. No. 296,127
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—239

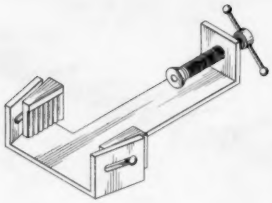


233,501
DISH
Walter Zeischegg, 3 Neue Str., 79 Ulm, Germany
Filed Mar. 30, 1973, Ser. No. 346,636
Claims priority, application Germany Oct. 2, 1972
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1

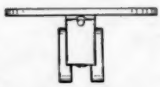
233,502
SPOON OR SIMILAR ARTICLE OF FLATWARE
John Rutland, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Dec. 4, 1972, Ser. No. 311,540
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

233,503
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 2, 1973, Ser. No. 356,339
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

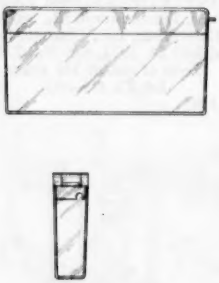
233,504
STILE CLAMP
William C. Wildman, 3915 Hoover St., Boise, Idaho 83705
Filed Dec. 26, 1972, Ser. No. 318,080
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—72



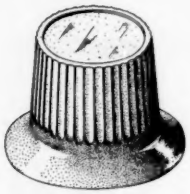
233,505
CASTER
Sven-Eric Juhlin, 31 Hovvagen, 134 Gustavsberg, Sweden, and Per-Olof Landgren, 4 Skurubacke, 130 Ektorp 10, Sweden
Filed May 29, 1973, Ser. No. 364,299
Claims priority, application Sweden Dec. 1, 1972
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D8—226



233,506
DISPENSER FOR CONFECTIONERY, GUM AND THE LIKE
Luis R. Rey, Brooklyn, N.Y., and Donald K. Takacs, Wheaton, Ill., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 26, 1973, Ser. No. 345,054
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—239

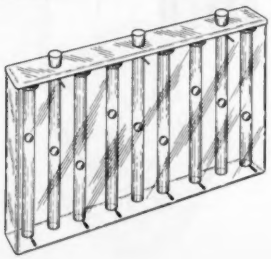


233,507
CONTAINER CLOSURE OR THE LIKE
Peter P. Stevens, Jr., P.O. Box 95, Point Reyes, Calif. 94956
Filed Mar. 21, 1973, Ser. No. 343,291
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—285



233,508
DUAL COMPARATIVE FALLING BALL VISCOMETER
Primo L. Pinotti, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Aug. 28, 1972, Ser. No. 284,387
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—84

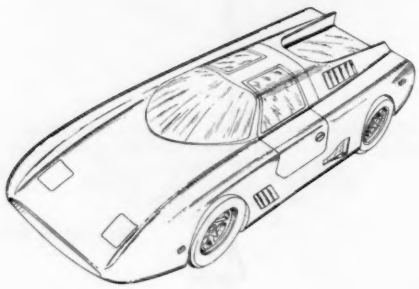
233,509
TRIPLE DUAL COMPARATIVE FALLING BALL VISCOMETER
Noel L. McHone, Redwood City, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Dec. 1, 1972, Ser. No. 311,082
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—84



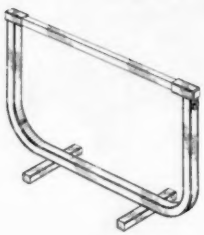
233,510
SAFETY FLAG FOR A BICYCLE
John B. Baker, Medina, Wash. (P.O. Box 368, Issaquash, Wash. 98027)
Filed Sept. 7, 1973, Ser. No. 395,232
Term of patent 7 years
Int. Cl. D29—*02*
U.S. Cl. D10—109

233,511
MEDICINE DISPENSING CABINET AND SIMILAR ARTICLE
Charles V. Condon, George E. Moore, and James Larson, Jamestown, N.Y., assignors to Watson Manufacturing, Jamestown, N.Y.
Filed Sept. 7, 1973, Ser. No. 394,994
Term of patent 14 years
Int. Cl. D12—*02*; D24—*99*
U.S. Cl. D12—28

233,512
AUTOMOBILE
Thomas M. Love, Rte. 3, Box 436, and Thomas M. Love, Jr., 1031 Martha Drive, Apt. 3C, both of Annapolis, Md. 21403
Filed Sept. 13, 1973, Ser. No. 396,697
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91

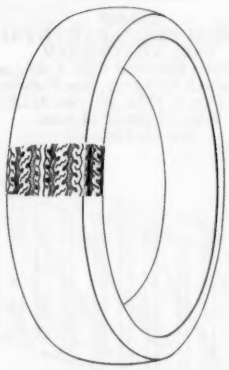


233,513
LOCKING BICYCLE STAND
Gary D. Corkill, 1143 E. D St., Ontario, Calif. 91764
Filed Apr. 16, 1973, Ser. No. 351,377
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



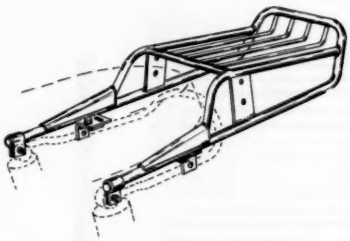
233,514
BICYCLE FORK
James A. Respress, 256 Box Ave., Buffalo, N.Y. 14211
Filed Apr. 16, 1973, Ser. No. 351,378
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—118

233,515
PNEUMATIC TIRE TREAD AND BUTTRESS
James H. Bierbusse, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Sept. 21, 1973, Ser. No. 399,665
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



233,516
AUTOMOBILE OVERTIRE
Raymond G. Beadle, P.O. Box 1813, Lubbock, Tex. 79408
Filed June 6, 1973, Ser. No. 367,644
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154

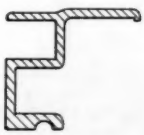
233,517
MOTORCYCLE RACK
Robert H. Girvin III, 170 Locust St., Holliston, Mass. 01746
Filed Jan. 29, 1973, Ser. No. 327,799
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl D12—158



233,518
WHEEL CENTER
Donald J. Reid, Pleasant Ridge, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Oct. 2, 1972, Ser. No. 294,490
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211

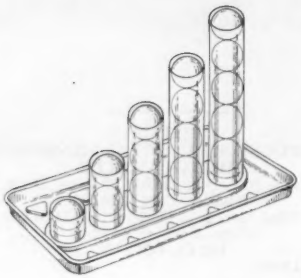
233,519
BUILDING
Paul Ear Chen, Glen Ellyn, and Joseph Charles Manganello, Naperville, Ill., and Gordon Elliott Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 9, 1973, Ser. No. 339,561
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R

233,520
EXTRUDED STRUCTURAL MEMBER OR SIMILAR ARTICLE
Eugene B. Le Van, 15858 El Paseo Drive, Whittier, Calif. 90603
Filed Mar. 8, 1972, Ser. No. 233,011
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

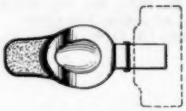


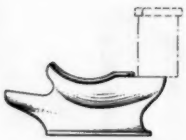
233,521
PERPETUAL CALENDAR
Alan E. Morris, 95 Westwood Drive, Westbury, N.Y. 11590
Filed Jan. 26, 1973, Ser. No. 327,136
Term of patent 3½ years
Int. Cl. D19—*03*
U.S. Cl. D19—25

233,522
CHILD'S COUNTING DEVICE
Eugene J. Majewski, 121 Elmore St., Park Ridge, Ill. 60068
Filed Sept. 5, 1972, Ser. No. 286,757
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59

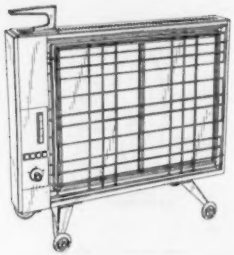


233,523
COMBINED WATER CLOSET BOWL AND SEAT
Minoru Sakamoto, 3911 Nioi Place, Honolulu, Hawaii 96816
Filed Feb. 21, 1973, Ser. No. 334,207
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—67

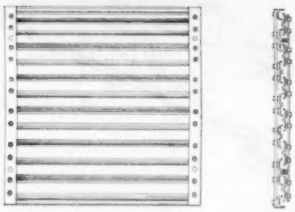




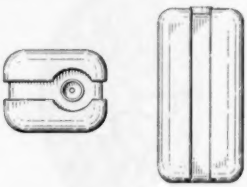
233,524
PORTABLE HEATER
Francisco Beldarrain, Cordovilla-Pamplona, Spain, assignor to Orbaiceta S.A., Cordovilla, Spain
Filed Dec. 18, 1972, Ser. No. 315,843
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—123



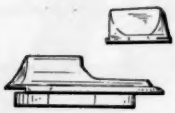
233,525
GREASE FILTER
Anthony Jordan, 262 Great River Road, Great River, N.Y. 11739
Filed Dec. 11, 1972, Ser. No. 313,767
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



233,526
CIGARETTE LIGHTER
Hans Lowenthal, Kensington, England, assignor to Colibri Lighters Limited, London, England
Filed Dec. 26, 1972, Ser. No. 318,197
Claims priority, application Great Britain July 7, 1972
Term of patent 7 years
Int. Cl. D27—*05*; D9—*03*
U.S. Cl. D27—36



233,527
HEAD FOR A LIGHTER
Ricardo Aguirre Gili, Barcelona, Spain, assignor to Flamagas S.A., Barcelona, Spain
Filed Jan. 26, 1973, Ser. No. 327,099
Claims priority, application Spain Nov. 21, 1972
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36 R

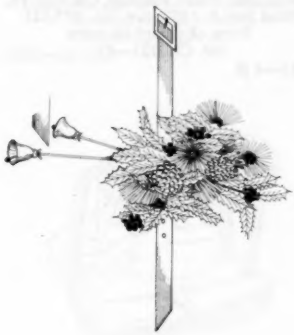


233,528
LIGHTER
Alfred Racek, Seitenberggasse 50, Wien 16, Austria
Filed Feb. 1, 1973, Ser. No. 328,650
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42 R

233,529
CIGARETTE LIGHTER
Nobuyoshi Moriya, Urawa, Japan, assignor to Mansei Kogyo Kabushiki Kaishya, Saitama, Japan
Filed Mar. 14, 1973, Ser. No. 341,124
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42 R

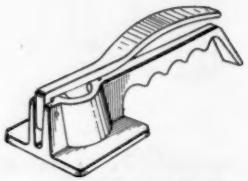
233,530
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaishya, Saitama, Japan
Filed Mar. 14, 1973, Ser. No. 341,125
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42

233,531
SEASONAL TRIMMING FOR A MAILBOX OR SIMILAR ARTICLE
Jerome Marrow, 40 E. 66th St., New York, N.Y. 10017
Filed Mar. 15, 1972, Ser. No. 235,098
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D29—1 B



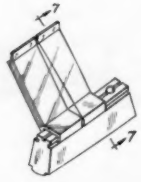
233,532
HOLDER FOR ARTIFICIAL FLORAL PETALS AND LEAVES
Leon Jack Mitchell, 29 Wadeson St., London E.2, England
Filed Dec. 27, 1972, Ser. No. 318,742
Claims priority, application Great Britain June 29, 1972
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 R

233,533
TABLET CRUSHER
Donald J. Ocel, 2732 41st Ave. S., Minneapolis, Minn. 55406; John J. Ocel, 7521 Elliot Ave. S., Bloomington, Minn. 55423; Samuel F. Ocel, 14442 Gladiola Court, Rosemount, Minn. 55068; and Donald M. Aslesen, 5135 36th Ave. S., Minneapolis, Minn. 55417
Filed Dec. 26, 1972, Ser. No. 318,026
Term of patent 14 years
Int. Cl. D24—*02*; D7—*04*
U.S. Cl. D32—3

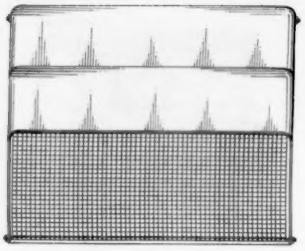


233,534
TOY FIGURE
William J. Maloney II, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed July 9, 1973, Ser. No. 377,521
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

233,535
COMBINED GOLF PUTTER HEAD AND MIRROR ADAPTER
James Karban, 2307 S. 17th Ave., North Riverside, Ill. 60546
Filed Aug. 16, 1972, Ser. No. 281,104
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



233,536
POLO GOAL
Don C. Herold, 10023 Hocker Drive, Merriam, Kans. 64106
Filed Aug. 31, 1972, Ser. No. 285,472
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 VV



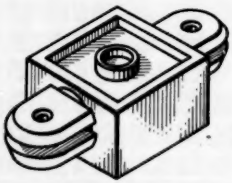
233,537
ROLLER SKATE
C. O. Horner, P.O. Box 248, St. Joseph, Mo. 64502
Filed July 23, 1973, Ser. No. 381,419
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 C

233,538
ORNAMENTAL DESIGN FOR A COMBINED RABBIT FIGURE AND TRICYCLE TOY
Esther Lee Singleton, R.R. 1, Box 52, St. Anne, Ill. 60964
Filed July 28, 1972, Ser. No. 276,053
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN

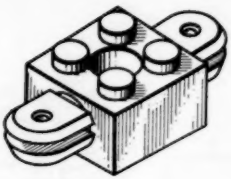
233,539
DOG FIGURE TOY BALL
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Jan. 24, 1973, Ser. No. 326,302
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 EE

233,540
RATTLE TOY
Walter P. Doe, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Apr. 9, 1973, Ser. No. 349,436
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AG

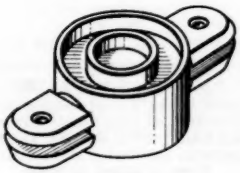
233,541
TOY ASSEMBLY ELEMENT
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland
Filed Mar. 15, 1973, Ser. No. 341,494
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



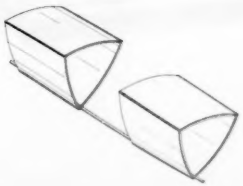
233,542
TOY ASSEMBLY ELEMENT
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland
Filed Mar. 15, 1973, Ser. No. 341,495
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



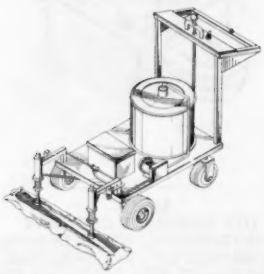
233,543
TOY ASSEMBLY ELEMENT
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland
Filed Mar. 15, 1973, Ser. No. 341,496
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



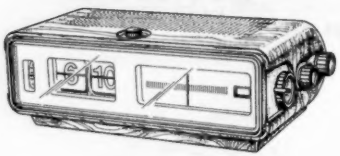
233,544
KITE
Julius M. Christoffel, Jr., Houston, Tex., assignor to Gayla Industries, Inc., Houston, Tex.
Filed June 8, 1973, Ser. No. 368,196
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF



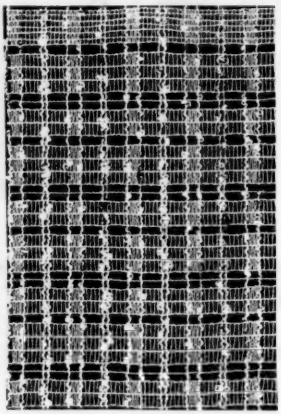
233,545
LIQUID WAX APPLICATOR
Larry L. Johns, 1724 Penninger, Boise, Idaho 83705
Filed Oct. 5, 1972, Ser. No. 295,347
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D37—3



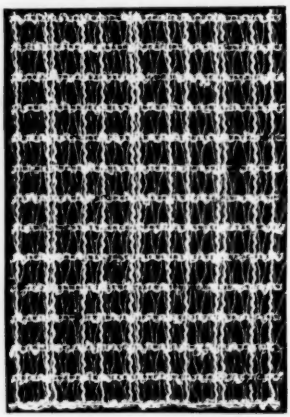
233,546
DIGITAL CLOCK RADIO
Shuhei Taguchi, Osaka, Japan, assignor to Matsushita Electric Co., Ltd., Osaka, Japan
Filed Dec. 7, 1972, Ser. No. 313,055
Claims priority, application Japan June 9, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 H



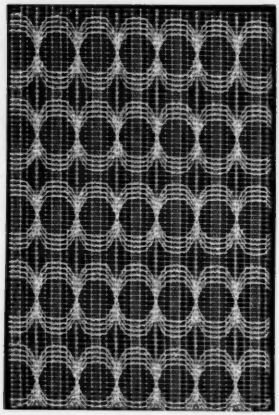
233,547
CURTAIN FABRIC
Peter E. Schroeder, Oberwil, near Brenngarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 16, 1973, Ser. No. 360,820
Claims priority, application Germany Nov. 17, 1972
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E



233,548
CURTAIN FABRIC
Peter E. Schroeder, Oberwil, near Brenngarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 22, 1973, Ser. No. 362,815
Claims priority, application Germany Feb. 20, 1973
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E

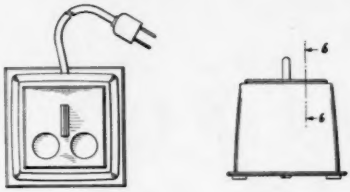


233,549
CURTAIN FABRIC
Peter E. Schroeder, am Falter, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 22, 1973, Ser. No. 362,841
Claims priority, application Germany Jan. 23, 1973
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6 E

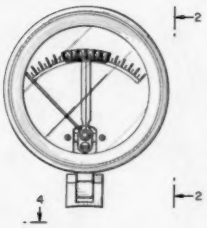


233,550
FLUORESCENT LANTERN
James E. Hetherington, Tannery Road, R.D. 2, Girard, Pa. 16417, and John H. Zelina, 4226 McCreary Ave., Erie, Pa. 16506
Filed Jan. 12, 1973, Ser. No. 322,963
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R

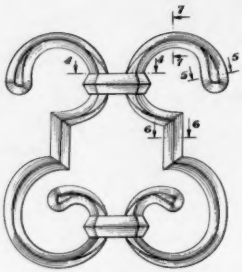
233,551
CONTACT LENS STEAMER UNIT OR THE LIKE
George F. Sitterle, Jacksonville, Fla., assignor to Frontier Contact Lenses of Florida, Inc., Jacksonville, Fla.
Filed Feb. 21, 1973, Ser. No. 334,265
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D49—11



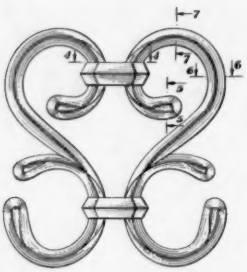
233,552
TACHOMETER WITH TORQUE ZONE INDICATOR
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corp., Los Angeles, Calif.
Filed Nov. 16, 1972, Ser. No. 307,159
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



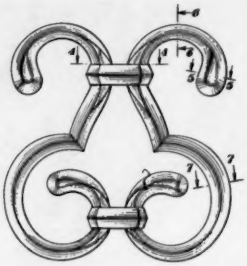
233,553
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Dec. 30, 1971, Ser. No. 214,505
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



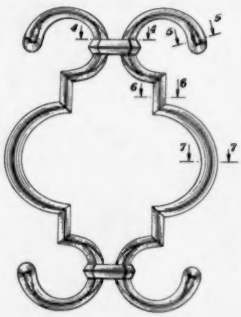
233,554
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Dec. 30, 1971, Ser. No. 214,506
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



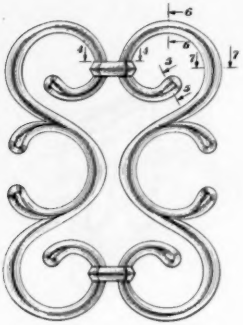
223,555
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Dec. 30, 1971, Ser. No. 214,536
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



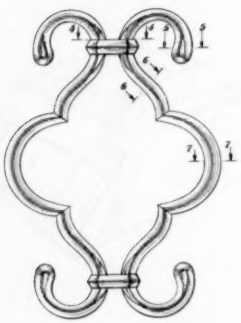
233,556
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Jan. 3, 1972, Ser. No. 215,265
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T



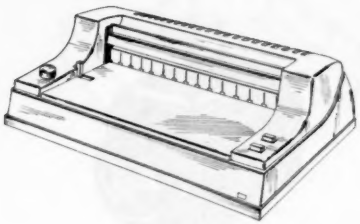
233,557
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Jan. 3, 1972, Ser. No. 215,266
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T

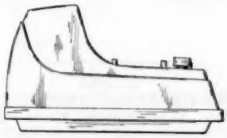


233,558
GRILLEWORK FOR TREILLAGES, ROOM DIVIDERS OR THE LIKE
Robert F. Seery, Oak Brook, Ill., assignor to Julius Blum & Co., Inc., Carlstadt, N.J.
Filed Jan. 3, 1972, Ser. No. 215,267
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D54—2 T

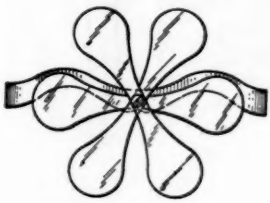


233,559
MACHINE FOR BINDING BOOKS
David R. Estes, Mountain View, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.
Filed Mar. 12, 1973, Ser. No. 340,388
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D55—1





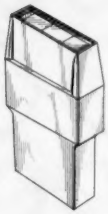
233,560
SUNGLASSES
St. Barth Alaska, 3811 S. Scoville Ave., Berwyn, Ill. 60402
Filed May 19, 1969, Ser. No. 17,219
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D57—1



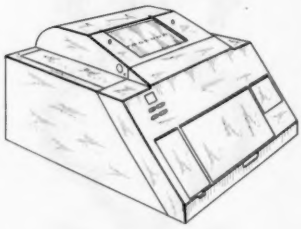
233,561
CAMERA
Zenzaburo Yoshino, Tokyo, Japan, assignor to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 3, 1972, Ser. No. 277,822
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B

233,562
ADJUSTABLE-HEAD ELECTRONIC FLASH UNIT
Claus Prochnow, Braunschweig, Klaus Pfitzner, Linden, and Jochen Kramer and Hans Schönfeld, Wolfsburg, Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed July 16, 1973, Ser. No. 379,558
Claims priority, application Germany Jan. 18, 1973
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F

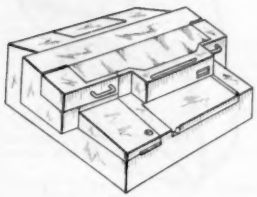
233,563
STAMP WITH INTERCHANGEABLE LETTER-BLOCKS
Takaji Funahashi, 1, 2-chome, Kitatakasho-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan
Filed Mar. 20, 1973, Ser. No. 343,341
Claims priority, application Japan Oct. 13, 1972
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D64—10



233,564
SOUND REDUCING COVER FOR A TYPEWRITER, TELEPRINTER OR THE LIKE
Berndt Ebbe Frick, 9 Herrgardsvagen, 13500 Tyreso, Sweden
Filed Apr. 30, 1973, Ser. No. 355,433
Claims priority, application Sweden Nov. 17, 1972
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A

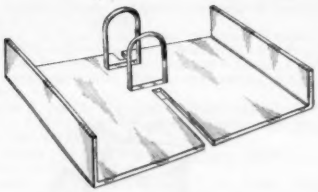


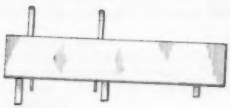
233,565
SOUND REDUCING COVER FOR TYPEWRITER, TELEPRINTER OR THE LIKE
Berndt Ebbe Frick, 9 Herrgardsvagen, 13500 Tyreso, Sweden
Filed Apr. 30, 1973, Ser. No. 355,434
Claims priority, application Sweden Nov. 17, 1972
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



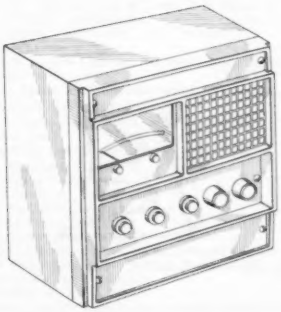
233,566
HIGHWAY COMMUNICATIONS STANDARD
Dennis J. Foley and Richard A. Gilmore, Columbus, Ohio, assignors to Design Properties, Inc., Wellston, Ohio
Filed Aug. 16, 1972, Ser. No. 281,169
Term of patent 3½ years
Int. Cl. D29—*02*
U.S. Cl. D72—1 H

233,567
CALENDAR HOLDER
Gordon Perry, Bayside, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 28, 1972, Ser. No. 295,981
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D74—5 R

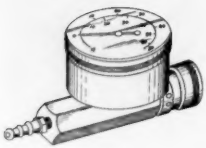




233,568
MEDICAL STATION INSTRUMENT UNIT
Paul A. Lyons, La Jolla, and Nathaniel W. Burks, Jr., and David L. Britt, San Diego, Calif., assignors to Medical Instruments & Technology Corp., San Diego, Calif.
Filed Oct. 20, 1972, Ser. No. 299,230
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F

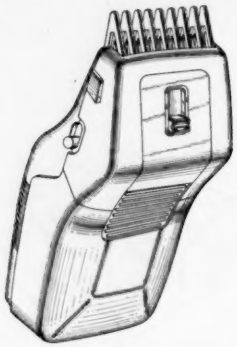


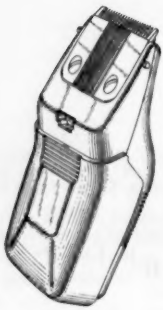
233,569
COMBINATION MANOMETER AND VARIABLE RELIEF VALVE
Bruce B. Miller, Eaton Rapids, Mich., assignor to Neo-Care, Inc., Eaton Rapids, Mich.
Filed Nov. 24, 1972, Ser. No. 308,966
Term of patent 14 years
Int. Cl. D24—*99, 02;* D23—*01*
U.S. Cl. D83—12 R



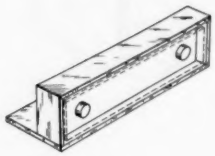
233,570
UMBRELLA HANDLE
Hans Hoffmann, Essen, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Feb. 25, 1972, Ser. No. 229,616
Claims priority, application West Germany Aug. 26, 1971
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3 A

233,571
ELECTRIC HAIR CUTTER
Taisuke Ono and Hisatane Ohi, Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jan. 3, 1973, Ser. No. 320,719
Claims priority, application Japan July 3, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A





233,572
NAME PLATE HOLDER
James R. Norrbohm, 9936 Columbus Ave., Minneapolis, Minn. 55420
Filed Jan. 2, 1973, Ser. No. 320,561
Term of patent 3½ years
Int. Cl. D20—*03*
U.S. Cl. D96—12 F



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Abbott, Bennie J.; and Stroud, Jeff A. Litter removal mechanism for poultry houses and the like. 3,845,516, Cl. 15-93.00h.
Abrams, Eileen Marie: *See*—
Abrams, Victor Joseph, 3,845,595.
Abrams, Victor Joseph; deceased (by Abrams, Eileen Marie; administratrix). Portable buildings. 3,845,595, Cl. 52-93.000.
ACF Industries, Incorporated: *See*—
Carlson, Edwin S., 3,845,878.
Needham, Robert F.; and Souchek, Dwaine G., 3,845,876.
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Malmrose, Gerald E.; and Helgesson, Ulf R., 3,845,838.
Acquaviva, Thomas; and Kukucka, William P., to Xerox Corporation. Sorter control to prevent over-stacking in the sorter trays. 3,845,949, Cl. 271-64.000.
Adams, George C., to Rollform Incorporated. Ceiling grid system expansion joint. 3,846,031, Cl. 403-28.000.
Addressograph-Multigraph Corporation: *See*—
Roteman, Jerome; and Gogola, Joseph K., 3,846,151.
Adler, Kalus: *See*—
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Van Paesschen, August Jean; and Herbots, Joseph Antonine, 3,846,134.
Ahlquist, Harry Richard. Skip bridge valve. 3,846,308, Cl. 210-331.000.
Ahmed, Adel Abdel, to RCA Corporation. Current attenuator. 3,846,696, Cl. 323-1.000.
Aida, Masaaki: *See*—
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Airpax Electronics Incorporated: *See*—
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Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.
Akazawa, Yoshinobu; Yagyu, Masami; Nozawa, Shigenori; and Yasui, Satoshi, to Pfizer Inc. Aqueous doxycycline compositions. 3,846,548, Cl. 424-227.000.
Akrongold, Harold S.; and Akrongold, Rochelle. Cosmetic skin powder containing urea. 3,846,550, Cl. 424-63.000.
Akrongold, Rochelle: *See*—
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Aksamit, Marion W.: *See*—
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Akzo N.V.: *See*—
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Alagy, Jacob; Cha, Bernard; and Koen, Cornelis, to Institut Francais du Petrole, des Carburants et Lubrifiants. Vertical reaction vessel for effecting reaction of liquid and gaseous reactants by liquid-gas contact. 3,846,079, Cl. 23-283.000.
Albani, Peter E., to Avco Corporation. Impingement cooled turbine blades and method of making same. 3,846,041, Cl. 416-97.000.
Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, to Schering Aktiengesellschaft. Nitrofurylpyrimidines. 3,846,428, Cl. 260-256.40c.
Alburn, Harvey E.; and Dvonch, William, to American Home Products Corporation. 6-[2-(1,4-Cyclohexadien-1-yl)acetamido] penicillanic acid. 3,846,406, Cl. 260-239.001.
Alderman, Robert Joe. Method for applying bands to a roof. 3,845,602, Cl. 52-741.000.
Aldrich, Ralph E.; and Simmons, William A., Jr., to Itek Corporation. Liquid crystal display containing an additional broad angle back scattering material. 3,846,014, Cl. 350-160.01c.
Alexeev, Nikolai Efimovich: *See*—
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Alimanestianu, Mihai. Vehicle traffic handling system. 3,845,717, Cl. 104-26.000.
Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Solution mining technique for tar sand deposits. 3,845,820, Cl. 166-266.000.
Allen, Joseph C.; and Braden, William B., Jr., to Texaco Inc. Recovery of oil by a vertical miscible flood. 3,845,821, Cl. 166-269.000.
Allen, Joseph C., to Texaco Inc. Method for preventing bottom water coning in oil wells. 3,845,823, Cl. 166-303.000.
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Siegmann, Arnon, 3,846,377.
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Alquist, Henry E.; Pollock, Lyle W.; and Dale, Glenn H., to Phillips Petroleum Company. Auxiliary fuel vaporizer system for an internal combustion engine. 3,845,749, Cl. 123-133.000.
Altamira, Anthony Francis: *See*—
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Anchia, Sergio A. Automatic word counting apparatus for a typewriter. 3,845,900, Cl. 235-102.000.
Ancona, John A.: *See*—
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Anderson, Paul, Industrier AB: *See*—
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Anderson, Robert F., to Universal Oil Products Company. HF alkylation including recycle and further alkylation of the alkylate-containing hydrocarbon. 3,846,505, Cl. 260-683.450.
Anderson, Stanley R. Rotary massager. 3,845,758, Cl. 128-56.000.
Andersson, Bengt Valfrid, to Anderson, Paul, Industrier AB. Climbing pole for climbing jacks. 3,845,934, Cl. 254-105.000.
Andersson, Per Ake, to International Cybernetic Machines Limited. Coin testing device. 3,845,849, Cl. 194-97.00r.
Ando, Takuo; and Yamazaki, Hiroyuki, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Adhesive crayon composition containing sorbitol-benzaldehyde reaction product as additive. 3,846,363, Cl. 260-29.6bm.
Andreani, Monique Andree: *See*—
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Andreasson, Bror Elis. Device for pressing air into inflatable articles. 3,845,795, Cl. 141-313.000.
Andrews, James D., to TRW Inc. Electrochemical machining cutoff. 3,846,262, Cl. 204-129.600.
Angliker, Hans-Joerg; Peter, Richard; and Artz, Klaus, to Ciba-Geigy AG. Sublimation transfer dyeing with styryl dyes. 3,846,069, Cl. 8-2.500.
Anonima Castelli S.A.S. di Cesare Castelli & C.: *See*—
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Antonov, Dimitar Simov: *See*—
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Apple, Joseph P., Jr.; and Lauterbach, William E., to Dole Refrigerating Company. Plate refrigeration air system. 3,845,638, Cl. 62-426.000.
Applied Inventions Corporation: *See*—
Kehler, Paul, 3,846,631.
Apsell, Sheldon P., Johnson, Olof C., Jr.; and Whitney, Robert W., to Eikonix Corporation. Remote paging with message storage. 3,846,783, Cl. 340-311.000.
Aquila, Werner: *See*—
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Arai, Hiroshi; Ohta, Jun; and Kikuchi, Yasunobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for detecting and indicating quantity of engine oil. 3,846,747, Cl. 340-59.000.
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Archer, Albert E., to Fonseca, John; as trustee for Archer, Albert E.; Hopper, Donald J.; Fonseca, John; Winlund, Lawrence J.; and Lee, Seward. Constant power supply employing a variable frequency inverter. 3,846,694, Cl. 321-18.000.
Arhan, Roger Pierre; and Lacroix, Andre Roger Camille, to Societe Honeywell Bull (Societe Anonyme). Velocity modulator device. 3,846,681, Cl. 318-115.000.
Armco Steel Corporation: *See*—
Raabe, Francis O.; and Yossa, Frank A., 3,846,190.
Armstrong Cork Company: *See*—
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Arnett, Lawrence E.; and Wiggins, Earl M., to Ford Motor Company. Inlet insert. 3,845,877, Cl. 220-86.00r.
Arnold, Richard B., to General Electric Company. Apparatus and method for inserting dynamoelectric machine coils. 3,845,548, Cl. 29-596.000.
Aronov, Anatoly Izrailevich: *See*—
Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.
Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna. Method of producing zeta-aminolevulinic acid hydrochloride. 3,846,490, Cl. 260-534.00r.
Artz, Klaus: *See*—
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Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
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Aske, Leonard E. T-manifold assembly for gas heated tool. 3,845,755, Cl. 126-401.000.
Asselborn, Peter; Cramer, Werner; and Mullejans, Heinrich, to Felten & Guilleaume Carlswerk Aktiengesellschaft. Making of longitudinally welded metal tubes. 3,846,610, Cl. 219-61.000.
Association d'Recherche et d'Entraide Cardiologiques et Angeiologiques: *See*—
Fontaine, Guy Hugues; and Ribot, Alain, 3,845,773.
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Astrom, Klas Johan: *See*—
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Athey, Stuart E.; and Thornburg, W. Edwin, to Hobart Manufacturing Company, The. Liquid temperature control and low liquid level detector. 3,846,615, Cl. 219-333.000.
Atkinson, David William, to Caterpillar Tractor Company. Vibration-isolating mounting for engines. 3,845,923, Cl. 248-3.000.
Atlas Copco Aktiebolag: *See*—
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Atlee, Zed J.; and Gager, Robert M., to Picker Corporation. Method of manufacture of X-ray tube having thoriated tungsten. 3,846,006, Cl. 316-26.000.
Atwal, Manmohan Singh; Watts, Daniel Jay; and Weisenborn, Frank Lee, to Squibb, E. R., & Sons, Inc. 1,4-Cyclohexadienyl imidazolidinyl cephalosporanic acids and derivatives thereof. 3,846,417, Cl. 260-243.00c.
Aubel, Leo J.: *See*—
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Augat, Inc.: *See*—
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Augsburger, Jean-Jacques, to Erfinor A.G. Process for securing a horological balance spring or hair spring and a collet together by welding. 3,846,612, Cl. 219-121.00m.
Austin, William E., to General Electric Company. Fast rise time quenching spark gap. 3,846,657, Cl. 313-195.000.
Automated Technology Corporation: *See*—
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Avramidis, Stellios Antony, to FMC Corporation. Multi-speed motion transmitting mechanism. 3,845,666, Cl. 74-336.000.
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Babcock, John C.: *See*—
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Bader, Jorg; deceased (by Bader-Ludwig, Dagmar; legal representative); Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, to Ciba-Geigy Corporation. Certain 1,2,4-thiadiazoles. 3,846,438, Cl. 260-302.0sd.
Bader-Ludwig, Dagmar: *See*—
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Bahder, George; and Garcia, Felipe G., to Phelps Dodge Industries, Inc. Splice for electric cables. 3,846,578, Cl. 174-88.00r.
Baikov, Valentin Nikolaevich: *See—*
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Bailey, Jay Richard, to McCulloch Corporation. Chain saw anti-vibration system. 3,845,557, Cl. 30-381.000.
Baird-Atomic, Inc.: *See—*
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Baker, Billy Z., to Roberts Supply, Inc. Apparatus and method for striating concrete. 3,846,036, Cl. 404-75.000.
Baker Hydro Inc.: *See—*
Baker, William O.; and Johnson, Charles S., 3,845,510.
Baker Industries, Inc.: *See—*
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Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.
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Balderson, Willard E.; and Birk, Billy D., to Balderson Inc. Landfill bucket. 3,845,870, Cl. 214-145.000.
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Banjavich, Mark P., to Taylor Diving & Salvage Co., Inc. Methods for cutting and raising submerged masses. 3,845,893, Cl. 225-1.000.
Barker, Sidney Alan; and Gray, Charles John, to Koch-Light Laboratories Limited. Bonding bonding of enzymes, enzyme derivatives and other biologically active molecules to polymeric materials. 3,846,306, Cl. 210-198.00c.
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Barrett, Edward L. Proportioned current battery. 3,846,174, Cl. 136-6.00r.
Barrett, Robert M. Wheel locking device. 3,845,643, Cl. 70-18.000.
Barrow, Gilbert C., to Massa Division, Dynamics Corporation of America. Electroacoustic transducer of the vibratile diaphragm type with controlled uniformity of performance characteristics and method for controlling uniformity. 3,846,650, Cl. 310-8.200.
Barsova, Antonina Petrovna: *See—*
Shubin, Vladimir Nikolaevich; Silantiev, Viktor Sergeevich; Khlyntsev, Alexandr Sergeevich; and Barsova, Antonina Petrovna, 3,845,648.
Bartlett, Raymond H. Stump splitter. 3,845,797, Cl. 144-2.00n.
Bashford, Gordon Dennis, to Rover Company Limited, The. Vehicle seating. 3,845,987, Cl. 297-385.000.
Batcheller, George C., Co., Inc.: *See—*
Kirby, John Ashley, 3,845,507.
Bauer, Johann: *See—*
Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.
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Baum, Henry T.; and Stiles, Claude J., to National Distillers and Chemical Corporation. Process and apparatus for measuring the composition of fluid plastics. 3,846,073, Cl. 23-230.00a.
Baum, Laszlo: *See—*
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Bayer Aktiengesellschaft: *See—*
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Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,414.
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Becher, Steven J. Side and rear mount tire carrier. 3,845,891, Cl. 224-42.210.
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Begin, Marcel; Morrissette, Camille; Beaumier, Pierre; and Tupinier, Charles, to Victoriaville Furniture Limited. Furniture element. 3,846,211, Cl. 161-7.000.
Behrend, Gerda A.: *See—*
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Behrend, Gerda A.; and Pahlow, Fritz H., said Pahlow assor. to said Behrend, Gerda A. Draft shield. 3,845,985, Cl. 297-184.000.
Bei, Tamara Alexandrovna: *See—*
Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich, 3,845,662.
Beisch, Hanspeter E., to Skil Corporation. Rotary disconnect for a rotary hammer tool. 3,845,826, Cl. 173-48.000.
Belcher, Brian E.: *See—*
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Bell & Howell Company: *See—*
Reekie, James; and Royston, Marvin F., 3,845,929.
Bell, Gordon M., to General Electric Company. Thermally conductive and electrically insultive mounting systems for heat sinks. 3,846,824, Cl. 357-80.000.
Bell Telephone Laboratories, Inc.: *See—*
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Courtney-Pratt, Jeofry Stuart; and Gregory, Richard Langton, 3,846,009.
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MacArthur, Donald Morley; and Skurkiss, Peter Kenny, 3,846,196.
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Bellmann, Manfred; and Pfeiffer, Gerd, to Mannesmannrohren-Werke Aktiengesellschaft. Diagonal rolling mill. 3,845,646, Cl. 72-100.000.
Beloit Corporation: *See—*
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Bendix Corporation, The: *See—*
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Bendler, Hellmut; and Marondel, Gunther, to Dynamit Nobel AG. Safety device for vehicles. 3,845,836, Cl. 180-82.00c.
Benkoe, Erwin: *See—*
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Benn, Edgar; Buchtl, Benno; and Ender, Manfred, to Briag AG. Dispenser assembly for wax substances. 3,846,029, Cl. 401-96.000.
Bennett, Bailey: *See—*
Bunk, Albert R.; and Bennett, Bailey, 3,846,370.
Benoit, Roland A.; and Duprey, Richard H., to Interroyal Corporation. Universal headboard construction. 3,845,511, Cl. 5-53.00r.
Berg, Carls Olof: *See—*
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Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, to Chemische Werke Heuls Aktiengesellschaft. Process for the production of pourable elastomer particles. 3,846,365, Cl. 260-33.6aq.
Berg, Lawrence F., to Caterpillar Tractor Company. End of stroke impact reducing means for linear fluid motors. 3,845,694, Cl. 91-402.000.
Berkman, Samuel; and Roundtree, Ural, Jr., to RCA Corporation. Vapor deposition apparatus with pyrolytic graphite heat shield. 3,845,738, Cl. 118-49.000.
Bernard, Walter J., to Sprague Electric Company. Tantalum pellet system and methods of making and using the same. 3,846,260, Cl. 204-25.000.
Bernhardt, William F., Jr. Bicycle safety seat for child. 3,845,892, Cl. 224-36.000.

Berntell, John Osvald; and Hellmen, Sven Rolf Bertil, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas Stirling cycle engine with in-line cylinders. 3,845,626, Cl. 60-525.000.
Bertelsen, William R. Surface effect vehicles and guideways therefor. 3,845,716, Cl. 104-23.0fs.
Besser, John E.: *See—*
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Bessette, Robert C. Apparatus for evaluating athletic performance. 3,846,704, Cl. 325-66.000.
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Strimple, Robert A.; McCall, George L.; and Walker, Robert L., 3,845,706.
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., to Gulf Research & Development Company. Regenerative process for the selective hydrodesulfurization of petroleum residuals under mild conditions. 3,846,285, Cl. 208-216.000.
Bianchi, Giuseppe; DeNora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, to Electronor Corporation. Method of producing valve metal electrode with valve metal oxide semi-conductive coating having a chlorine discharge catalyst in said coating. 3,846,273 Cl. 204-290.0f.
Biber, Conrad H., to Polaroid Corporation. Automatic electronic flash camera. 3,846,812, Cl. 354-145.000.
Bice, William A., to Clark Equipment Company. Tractor suspension. 3,845,833, Cl. 180-29.000.
Bicosa Societe de Recherches: *See—*
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Black, Sevalls, & Bryson, Inc.: *See—*
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Blackwell, Robert J.; Kehn, Donald M.; and Whitney, Thomas A., to Esso Production Research Company. Hydraulic fracturing method using gelled hydrocarbons. 3,846,310, Cl. 252-8.55r.
Blaw-Knox Construction Equipment, Inc.: *See—*
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Blea, Maxine R.: *See—*
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Boesch, Roger; Blind, Andre; and Cassal, Jean-Marie, 3,846,440.
Blomberg, Folke Ivar; and Engerstam, Marten, to Monark-Crescent AB. Bicycle exerciser with work indicator structure. 3,845,663, Cl. 73-379.000.
Blomstrom, Ralph. Process for increasing the natural color intensity of seafoods. 3,846,566, Cl. 426-250.000.
Bloom, John Allison, to Texas Instruments Incorporated. Metal carbonitride coatings. 3,846,162, Cl. 117-106.00r.
Blum, Joseph M.; and Shih, Kwang K., to International Business Machines Corporation. Liquid phase epitaxy of $Al_xGa_{1-x}As$. 3,846,191, Cl. 148-172.000.
Blumenthal, Jack L.; and Guth, Eugene D., to TRW Inc. Catalyst for the spontaneous decomposition of monopropellant hydrazine. 3,846,339, Cl. 252-438.000.
BMT Manufacturing Corporation: *See—*
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Boden, Karl; Geweke, Werner; and Scheffer, Dietrich, to Padana AG. Magnetic bearing assembly for journalling a rotor in a stator. 3,845,997, Cl. 308-10.000.
Boden, Ogden W. Cord locking assembly. 3,845,575, Cl. 36-50.000.
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Boesch, Roger; and Blind, Andre, to Rhone-Poulenc S.A. Process for the preparation of 3-phenyl-5-t-butyl-2-oxadiazolones. 3,846,439, Cl. 260-307.00a.
Boesch, Roger; Blind, Andre; and Cassal, Jean-Marie, to Rhone-Poulenc S.A. Process for the preparation of 3-phenyl-5-t-butyl-2-oxadiazolones. 3,846,440, Cl. 260-307.00a.
Bogdanovsky, Vladimir Borisovich: *See—*
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Bolton-Emerson, Inc.: *See—*
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Bon, David R.: *See—*
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Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, to Astra Lakemedel Aktiebolag. Dibenzofuranyloxy and carbazolyloxy alkanoic acids and esters. 3,846,445, Cl. 260-315.000.
Boocock, David; Bing, Alan J.; and Preston, Kevin S., to British Railways Board. Railway car centrifugal force stabilizing device. 3,845,724, Cl. 105-164.000.
Boomgaard, Dirk J.: *See—*
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Borg-Warner Corporation: *See—*
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Zimmer, George A.; and Struttmann, Hilarius S., 3,845,999.
Borgstrom, Lennart, to Record Taxameter AB. Distance measuring instrument for motor vehicles. 3,846,803, Cl. 346-95.000.
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Bossler, Robert B., Jr., to Kaman Aerospace Corporation. Apparatus for measuring wear of rod end bearings. 3,845,735, Cl. 116-114.00q.
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Bougard, Georges. Water cooling of wall surfaces. 3,845,813, Cl. 165-47.000.
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Bowmar Instrument Corporation: *See—*
Herr, Robert W.; Sigl, Edward D.; and Aksamit, Marion W., 3,845,850.
Boyer, Lyndon D.: *See—*
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Bratschi, Konrad, to Firm K. Bratschi Silent Gliss. Fastening device for use on a wall or ceiling surface. 3,845,927, Cl. 248-223.000.
Brenner, Alfred E., to Summagraphics Corporation. Position determination device. 3,846,580, Cl. 178-19.000.
Bressel, Ulrich; Fuchs, Werner; and Platz, Rolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Dehydrogenation of organic compounds. 3,846,472, Cl. 260-465.900.
Brett, James E., to Purex Corporation, Ltd. Dispensing container apparatus. 3,846,078, Cl. 23-267.00a.
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Bridgestone Tire Company Limited: *See—*
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Brodrueck, Detlef A., to Teletype Corporation. Print control logic circuitry for on-the-fly printers. 3,845,710, Cl. 101-93.140.

Brodsky, Robert S. Detection system for protected area with keyboard inhibitor for re-entry. 3,846,782, Cl. 340-274.000.

Broll, Helmut: *See*—
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Bronicki, Lucien Yehuda; and Yogev, Amnon, to Ormat Turbines (1965) Ltd. Heat transfer apparatus. 3,845,628, Cl. 60-656.000.

Brown, Alan V.; and Hochberg, Frederick, to International Business Machines Corporation. Technique for fabricating integrated incandescent displays. 3,846,661, Cl. 313-491.000.

Brown, Ced F. Wheel conveyor system. 3,845,854, Cl. 198-184.000.

Brown Company: *See*—
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Brown, Harry W., to Cutler-Hammer, Inc. Warning light for electrical switches. 3,846,777, Cl. 340-252.00r.

Brown, James E.; Woods, Andrew B.; and Kliger, Howard S., to United States of America, Army. Forward area alerting sensor netting system. 3,846,797, Cl. 343-6.00r.

Brown, James H.; Buchanan, James E.; and Morrison, Steven, to Westinghouse Electric Corporation. High speed parallel-cascaded analog to digital converter. 3,846,786, Cl. 340-347.0ad.

Brown, John W., to Qantix Corporation. Transparent front projection screen having concave ridges thereon. 3,846,012, Cl. 350-128.000.

Brown, Ronald W.; and Reynolds, Ronald W., to Sun Oil Company of Pennsylvania. Process of drying ethers. 3,846,088, Cl. 44-56.000.

Brucker, Christian. Process of an installation for purifying sewage. 3,846,291, Cl. 210-14.000.

Bruijn, Engelbertus Jacobus; Hamburg, Fokko Wessel; Kanij, Johannes Bastiaan Willem; and De Rooy, Robert, to Reactor Centrum Nederland. Sintering of sol-gel material. 3,846,520, Cl. 264-.500.

Brundage, Robert Wesley. Rotary abutment hydraulic motor or pump. 3,846,055, Cl. 418-124.000.

Bryan, John L.: *See*—
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Buchner, Norbert, to Fr. Hesser Maschinenfabrik AG. Multi-layer web of packaging material. 3,846,220, Cl. 161-145.000.

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Bucksbaum, Arnold M. Programming circuit for microwave ovens. 3,846,607, Cl. 219-10.550.

Budde, Herman, to U.S. Philips Corporation. Semiconductor device having conducting pins and cooling member. 3,846,825, Cl. 357-81.000.

Bullard, Herbert L.; St. Cyr, David R.; and Osborn, Robert A., to Goodyear Tire & Rubber Company, The. Pressure sensitive adhesive compositions comprising rubber and a resinous interpolymer. 3,846,352, Cl. 260-5.000.

Bunk, Albert R.; and Bennett, Bailey, to Shatterproof Glass Corporation. Sealing element and composition. 3,846,370, Cl. 260-42.360.

Bunker Ramo Corporation: *See*—
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Bunn, Clinton O., to Col-Ment Corporation. Composition for recovering oil from water. 3,846,335, Cl. 252-428.000.

Burcik, Emil J.: *See*—
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Burlington Industries, Inc.: *See*—
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Burroughs Corporation: *See*—
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Burton, Louis Lasseter, to Du Pont de Nemours, E. I., and Company. Mineral reinforced nylon composition with high impact strength. 3,846,367, Cl. 260-37.00n.

Busch, Robert W.: *See*—
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Busma, John H., Jr.; and Romander, Curtis M., to Stanford Research Institute. Method for bonding concentric tubular elements to one another. 3,846,206, Cl. 156-294.000.

Buttery, Kenneth T.; and Lugt, Thomas Vander, Jr., to Brown Company. Snap-erected container. 3,845,897, Cl. 229-16.00r.

Butts, Ernest O.; and Hall, John S., to Hambro Structural Systems Limited. Steel joist or composite steel and concrete construction. 3,845,594, Cl. 52-334.000.

Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Alseev, Nikolai Eimovich; and Davydov, Boris Leonidovich. Nd and Yb containing phosphate glasses for laser use. 3,846,142, Cl. 106-47.00r.

Buzzolini, Mario G., to Sandoz-Wander Inc. 2-Methyl-1,3-propanediamine derivatives. 3,846,496, Cl. 260-570.700.

Bychkovskaya, Ljudmila Nikolaevna: *See*—
Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.

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Byrd, Walter C., III, to General Motors Corporation. Self-locking seal for generator leads. 3,845,961, Cl. 277-212.00f.

Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., to Owens-Illinois, Inc. Gaseous discharge device. 3,846,171, Cl. 117-223.000.

Cabot Corporation: *See*—
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Calabro, Salvatore R.; Calabro, John A.; and Mick, Peter R., to Automated Technology Corporation. Polydecade decimal to digital encoder. 3,846,788, Cl. 340-347.00p.

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Callahan, John William; and Capdeville, Martin John, to Pennwalt Corporation. Abrading apparatus. 3,845,586, Cl. 51-12.000.

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Camp, Richard H. Throttle, ignition and brake controls. 3,845,847, Cl. 192-3.00s.

Campbell, Goerge Thomas Richardson; and Kasuga, Toshishige, to Algoship International Limited. Marine cargo handling crane. 3,845,865, Cl. 212-57.000.

Campbell, J. Allan; and Babcock, John C., to Upjohn Company, The. Organic compounds. 3,846,456, Cl. 260-397.300.

Campbell, Sylvester J. Liquid waste treatment. 3,846,293, Cl. 210-18.000.

Canadian Cellulose Company, Limited: *See*—
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Cappelli, Quido A., to Danker & Wohlk, Inc. Artificial eye and method of construction. 3,846,199, Cl. 156-61.000.

Cappetta, Joseph G.; and Langdo, Steven H., to United States of America, Army. Testing method and apparatus for simulating acceleration functions. 3,845,665, Cl. 73-432.0sd.

Capy, Marcel, to Compagnie Europeene Pour l'Equipment Menager CEPEM. Control device for gas burner. 3,845,582, Cl. 34-1.000.

Carando Machine Works: *See*—
Spaan, Harry C., 3,845,656.

Cardas, Octavian. Pressure regulating means for gas storage tanks included in severage systems. 3,845,780, Cl. 137-251.000.

Carl, James R., to United States of America, Air Force. Integrated window, antenna, and waveguide with plasma alleviation. 3,846,798, Cl. 343-705.000.

Carlson, Edwin S., to ACF Industries, Incorporated. Safety vent system for tanks. 3,845,878, Cl. 220-89.00a.

Carlson, Larry W., to Rockwell International Corporation. Aerator device and method. 3,846,516, Cl. 261-87.000.

Carlson, Lars Anders Fritz: *See*—
Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, 3,846,445.

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Carnahan, Robert D.: *See—*
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Carr, Hugh G.; and Steffen, William L., to Starr Corporation, The. Animal self feeder. 3,845,744, Cl. 119-51.130.
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Carrier, Joseph D., to Carrier, J. D., Shoe Co. Limited. Manufacture of molds for footwear. 3,846,533, Cl. 264-225.000.
Carriere, Pierre P.; Leynaert, Jacky R.; Meauze, Georges D.; and Thibert, Jean-Jacques, to Office National d'Etudes et de Recherchs Aerospatiales (par abreviation: O.N.E.R.A.). Fixed blading of axial compressors. 3,846,038, Cl. 415-1.000.
Carson, John Robert, to McNeil Laboratories, Inc. Preparation of 5-aroyl-pyrroles and intermediates therefor. 3,846,447, Cl. 260-326.470.
Carter, Clyde Thomas; and Henschen, Homer Ernst, to AMP Incorporated. Electrical contact terminal which can be mated with an identical terminal or with a dissimilar terminal. 3,846,735, Cl. 339-47.000.
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Case, George S. Racket with disposable hand grip. 3,845,954, Cl. 273-75.000.
Case, Laura K. Photographically magnetic information storage element. 3,846,591, Cl. 179-100.10a.
Cassal, Jean-Marie: *See—*
Boesch, Roger; Blind, Andre; and Cassal, Jean-Marie, 3,846,440.
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Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
Casset, Georges; Driffort, Jean-Pierre; and Lebel, Pierre, to Ste dite France-Couleur. Mounting arrangement for coplanar grids having common flat strip cathode. 3,846,659, Cl. 313-411.000.
Caterpillar Tractor Company: *See—*
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Berg, Lawrence F., 3,845,694.
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Whitfield, Joseph A., 3,845,981.
Cecil, Florence A. Casement window. 3,845,585, Cl. 49-139.000.
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Hou, Kenneth C.; and Thomas, Norman W., 3,846,356.
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Chambers, Henry B., to Hydranautics. Chain jack with mechanically and hydraulically operated pawls. 3,845,935, Cl. 254-110.000.
Chapman, Robert R., to Sortex Company of North America, Inc. Vegetable orienting and crowning. 3,845,705, Cl. 99-643.000.
Chapman, Ronald H., to Motorola, Inc. DC restoration amplifier with automatic zero offset adjustment. 3,846,710, Cl. 330-11.000.
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Class, Gottfried; and Eggers, Berend, to Gesellschaft fur Kernforschung. Stacked and tiltable compartments forming a nuclear fuel assembly. 3,846,234, Cl. 176-78.000.
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Cloyd, Harold S., to Nosco Plastics Incorporated. Syringe with puncturable stem. 3,845,763, Cl. 128-218.0da.
Cobb, Donald E., to Lee, Raymond, Organization, Inc., The. Infant bed for use on horseback. 3,845,512, Cl. 5-82.000.
Cochran, J. Richard, to McGraw-Edison Company. Washing machine transmission system. 3,845,642, Cl. 68-23.700.
Cockin, Robert, to Lucas, Joseph, (Electrical) Limited. Stator assemblies for dynamo electric machines. 3,845,647, Cl. 72-137.000.
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Cohen, David J., to Smith, A. O., Corporation. Vehicle door proximity detector system. 3,845,843, Cl. 187-29.00r.
Cohen, Fredric S., to Polaroid Corporation. Light-polarizing element. 3,846,013, Cl. 350-147.000.
Cohen, Morrel H., to Energy Conversion Devices, Inc. Method and means for resetting filament-forming memory semiconductor device. 3,846,767, Cl. 340-173.00r.
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Col-Ment Corporation: *See—*
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Cole, Mark F., Jr. Can for liquid. 3,845,880, Cl. 220-258.000.
Coles, Donald K. Musical instruments. 3,845,685, Cl. 84-451.000.
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Colyn, Roland, to Compagnie Generale d'Electricite. Device for charging an electric power storage element to a predetermined voltage. 3,846,690, Cl. 320-1.000.
Comalco Limited (formerly K/a Comalco Industries Pty., Limited): *See—*
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Compoly, Albert William; and Temple, Alfred Charles, to Avionic Instruments Inc. Selectively switched, malfunction-responsive three phase and parellel logic box for plural static inverters. 3,846,693, Cl. 321-12.000.
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Compucolor, Incorporated: *See—*
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Condry, Martin: *See—*
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Conn, William K., to Philadelphia Quartz Company. Detergent composition with controlled alkalinity. 3,846,346, Cl. 252-527.000.
Conner, Kenneth F.: *See—*
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McCain, David L., 3,845,990.
McGuire, Stephen E.; Kennedy, Carl D.; and Stauter, John C., 3,845,862.
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Conway, Edward F.; and Conner, Kenneth F., to Magnaflux Corporation. Method of detecting flaws in the exterior surfaces of hollow workpieces. 3,845,658, Cl. 73-104.000.
Cook, Charles W., to Avco Corporation. Open circuit and ground detector for fire and burglar alarm system. 3,846,793, Cl. 340-409.000.
Cook, Wallace H. Tab top can opener. 3,845,675, Cl. 81-3.30r.
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Courier-De-Mere, Henri Edouard Francois Marie, to Bicosa Societe de Recherches. Lighter employing electric spark ignition. 3,846,063, Cl. 431-255.000.
Courtney-Pratt, Jeofry Stuart; and Gregory, Richard Langton, to Bell Telephone Laboratories, Incorporated. Apparatus for enhanced depth of field viewing. 3,846,009, Cl. 350-87.000.
Courty, Philippe, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for manufacturing iron molybdate catalysts of high strength and the use of the resulting catalysts in the catalytic oxidation of alcohols to aldehydes. 3,846,341, Cl.252-462.000.
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Crabtree, Kenneth L., to Keyes Fibre Company. Open bottom tray with multiple pedestal display platform. 3,845,896, Cl. 229-2.500.
Cramer, Werner: *See—*
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Criddle, Dean W.; and Meader, Arthur L., Jr., to Chevron Research Company. Resilient oil extended polyurethane surfaces. 3,846,364, Cl. 260-33.6ub.
Crocker, Roy E. Apparatus for heat treating liquid or semi-liquid material. 3,846,302, Cl. 210-71.000.
Croix, Louise S., to Airco, Inc. Azeotropes of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether with acetone, methyl ethyl ketone and tetrahydrofuran. 3,846,332, Cl. 252-364.000.
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Cross, Edward A.; and Frye, Richard L., to Texaco Inc. Grease thickened with coated fibrous asbestos. 3,846,312, Cl. 252-13.000.
Crouch, William B., to Texaco, Inc. Reducing gas generation. 3,846,095, Cl. 48-196.00r.
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Cull, Neville L.; and Vohsberg, Darius B., to Esso Research and Engineering Company. Regeneration process for flue gas sorbent. 3,846,536, Cl. 423-244.000.
Cummins, Richard Williamson, to FMC Corporation. Oxidation of olefinic compounds to glycols. 3,846,478, Cl. 260-484.00r.
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Curry, Renwick E., to Massachusetts Institute of Technology. Vehicle brake light control system. 3,846,749, Cl. 340-72.000.
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D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, to Pennwalt Corporation. Coupled peroxides. 3,846,396, Cl. 260-94.9ga.

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Davis, Bernard H., to Robertson, H. H., Company. Apparatus for fabricating double-skin foam core construction panels. 3,846,054, Cl. 425-110.000.

Davis, William W., to Sperry Rand Corporation. Pulse amplitude modulated signal generator. 3,846,705, Cl. 325-141.000.

Davison, Ellison L.; and Menold, Robert F., to Mine Safety Appliances Company. Adjustable ear cover assembly for safety hats. 3,845,505, Cl. 2-209.000.

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Death, Frank S.; and Szekely, Andrew G., to Union Carbide Corporation. Method of melting metals with flames. 3,846,119, Cl. 75-43.000.

Deaton, Thomas M., to Otis Engineering Company. Well tools. 3,845,818, Cl. 166-224.000.

Decker, Alfred S.; Duff, John R.; and Heier, Robert J., to Owens-Illinois, Inc. Article handling apparatus. 3,845,851, Cl. 198-22.00r.

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Johnson, Robert Allen; and Raisbeck, Wesley Paul, 3,845,568.

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Delamater, William B. Sprinkler feeder for lawn food. 3,845,902, Cl. 239-314.000.

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Deltente, Jacques J.; O'Connor, Richard J.; and Kuo, Mau-Jung, to Monsanto Company. Process for the preparation of heat-resistant alpha-galactosidase enzyme. 3,846,239, Cl. 195-66.00r.

Demler, Henry William, Sr., to AMP Incorporated. Hand tool. 3,845,538, Cl. 29-234.000.

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Demos, Peter T. Apparent wind indicator adapted to establish optimum wind direction relative to the sail of a sailboat. 3,845,734, Cl. 116-114.00r.

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Dernbach, Berthold; Jurisch, Ewald; and Landgraf, Helmut, to Siemens Aktiengesellschaft. Safety fitting. 3,845,879, Cl. 220-89.00a.

Desai, Ramesh R., to Globe-Union Inc. Storage battery. 3,846,175, Cl. 136-14.000.

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Detroit Gasket and Manufacturing Company: *See—*
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Devlin, Charles L.; and Eggenberger, Markus A., to General Electric Company. Two-out-of-three logic terminal board. 3,846,739, Cl. 339-198.00j.

DeVoe, James A.: *See—*
Barrett, Burton M.; and DeVoe, James A., 3,845,928.

Dew, John N.; Boyer, Lyndon D.; and Gawel, Len J., to Continental Oil Company. Microorganism recovery process. 3,846,244, Cl. 195-104.000.

Dexion-Comino International Limited: *See—*
Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.

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Renault, Philippe; Dezael, Claude; and Deschamps, Andre, 3,846,539.

Di Fiore, Lucio; and Calcagno, Benedetto, to Societa Italiana Resine S.I.R. S.p.A. Reactivation of aluminum trichloridehydrocarbon catalytic complexes used in the alkylation of aromatic compounds. 3,846,334, Cl. 252-414.000.

Dick, A. B., Company: *See—*
Ostergren, Dale C.; and Zabiak, Daniel M., 3,846,141.

Dieckmann, Uwe: *See—*
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Dietrich, William C., to United States of America, Atomic Energy Commission. Chemical trap. 3,846,256, Cl. 203-33.000.

Dietz, Raymond Louis, to Owens-Illinois, Inc. Multilayer dielectric. 3,846,222, Cl. 161-162.000.

Diguet, Daniel; and Henry, Loic, to U.S. Philips Corporation. Method of treating semiconductor materials consisting of III-V compounds. 3,846,169, Cl. 117-213.000.

Dilillo, Franklin M.; and Dilillo, Michael A. Excavating apparatus. 3,845,871, Cl. 214-145.000.

Dilillo, Michael A.: *See—*
Dilillo, Franklin M.; and Dilillo, Michael A., 3,845,871.

Dille, Roger M.; and Chapman, Ronald W., to Texaco Inc. Method of reducing the viscosity of carbon-containing oils. 3,846,087, Cl. 44-51.000.

Direccion General de Investigacion y Desarrollo (DIGID), Ministerio de Defensa de la Republica Argentina: *See—*
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Disdier, Andre: *See—*
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Doe, Lester Adrian, Jr., to GAF Corporation. Polymerization process. 3,846,384, Cl. 260-80.30e.

Doerfling, Ralph G.; and Motycka, Charles J., to Detroit Gasket and Manufacturing Company. Decorative covering and method for applying decorative covering to vehicle panels. 3,846,200, Cl. 156-85.000.

Doesburg, Van I.: *See—*
Householder, Kermit W.; and Doesburg, Van I., 3,846,329.

Dolan, Courtney F.: *See—*
Sharp, Ellis Alvin; and Dolan, Courtney F., 3,845,671.

Dolby, Ray Milton. Noise reduction systems. 3,846,719, Cl. 333-14.000.

Dole Refrigerating Company: *See—*
Apple, Joseph P., Jr.; and Lauterbach, William E., 3,845,638.

Dondis, Edward F.; and Payne, John W., to Mobil Oil Corporation. Process for growing microorganisms with low pressure air. 3,846,245, Cl. 195-109.000.

Donohue, James A.; Winston, John H.; and Ward, Harry M., III, to Outboard Marine Corporation. Rotary combustion air cooling arrangement. 3,845,747, Cl. 123-8.010.

Doonan, David F.: *See—*
Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., 3,846,424.

Dornbush, Ross J. Shipper package. 3,845,859, Cl. 206-320.000.

Doty, Myron L., to Moorfeed Corporation. Spring mount for vibratory feeder. 3,845,857, Cl. 198-220.0ca.

Doughty, Frederic C., to Elco Corporation. Strobe light system for transitional guidance and delineation. 3,846,672, Cl. 315-312.000.

Douglas, Carl L.; Evans, William J.; Kiess, Ronald J.; and Sutton, Robert A., said Evans and said Kiess assors. to . Food service tray. 3,845,875, Cl. 220-20.000.

Douglas, James K., to Oilgear Company, The. Intensifier pump with half wave modulator. 3,846,049, Cl. 417-404.000.

Dover Corporation: *See—*
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Dovre Ski Binding, Inc.: *See—*
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Dow Chemical Company, The: *See—*
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Dow Corning Corporation: *See—*
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Doyle, Edward J.; and Bagwell, Richard S., Jr., to Schick Incorporated. Electric fluid heating unit. 3,846,614, Cl. 219-302.000.

Drake, John Alfred; Payne, Alan James; and Reichert, Andrew Ronald, to International Computer Limited. Data processing arrangements. 3,846,759, Cl. 340-172.500.

Drake, R. L., Company: *See—*
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Dreher, John L.: *See—*
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Dreher, John L.; and Carter, Crawford F., to Chevron Research Company. Grease thickened with ureido compound and alkaline earth metal aliphatic carboxylate. 3,846,314, Cl. 252-18.000.

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Graf, Walter Luttrell, 3,846,330.
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Duff, John R.: *See—*
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Duff, Joseph H., to Gulf Degremont, Inc. Method and apparatus for controlling flow to a battery of filters. 3,846,303, Cl. 210-73.000.

Dumas, Christ J.; and Aubel, Leo J., to American Plasticraft Company. Variable resistance assembly. 3,846,731, Cl. 338-127.000.

Dumin, David Joseph, to Inselek Inc. Process for producing lightly doped P and N-type regions of silicon on an insulating substrate. 3,846,194, Cl. 148-188.000.

DuMont, Hans-Christoph; Strohwald, Rainer; and Reum, Helmut, to Bosch, Robert, G.m.b.H. Method and apparatus for electrographic drawing. 3,846,801, Cl. 346-74.00e.

Duncan, Bernard F.; and Seto, David K., to International Business Machines Corporation. Semiconductor fabrication method for accommodating redundancy. 3,846,259, Cl. 204-15.000.

Dunham-Bush, Inc.: *See—*
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Dunlap, Charles R.; and Himes, Harris D. Water injection system for an internal combustion engine. 3,845,745, Cl. 123-25.001.

Dunn, Edward D., Jr., to Versatile Structures Incorporated. Ferrous aggregate for concrete. 3,846,085, Cl. 29-191.600.

Duprey, Richard H.: *See—*
Benoit, Roland A.; and Duprey, Richard H., 3,845,511.

Dura-Plex Industries, Inc.: *See—*
Elmore, Richard R.; and Couch, Benjamin M., 3,846,524.

Durr, Manfred, to Polysius AG. Rotary furnace. 3,846,067, Cl. 432-80.000.

Duynstee, Eduard F. J.; and Mevis, Maria E. H. A., to Stamicarbon N.V. Process for the preparation of hydroperoxide derivatives of polymers. 3,846,266, Cl. 204-159.200.

Dvonch, William: *See—*
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Dynamit Nobel AG: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
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Dyson, Norman H., to Syntex Corporation. Process for the preparation of 1,2,3,4,9,12-hexahydrophenanthrenes. 3,846,484, Cl. 260-514.500.

Dziki, Michael M.; Schultz, George; and Markow, Elliott W., to ISM Corporation. Time accumulator man-hours expended. 3,846,702, Cl. 324-186.000.

Eastern Rotorcraft Corporation: *See—*
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Kolze, Lawrence A.; and Jones, William H., 3,846,600.
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Ebeling, Harold O.; and Smith, Russell D., to Black, Sevalls, & Bryson, Inc. Fuel burner apparatus. 3,846,066, Cl. 431-351.000.

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EBR Development Corporation, mesne: *See—*
Palmonka, Edward, 3,846,132.

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DeAntoni, Jacques; and Eche, Raymonde, 3,846,430.

Eckel, Alan. Batten assembly to hold enclosure sheets. 3,845,603, Cl. 52-753.00j.

Eckhardt, Claude: *See—*
Lohmann, Frank; Eckhardt, Claude; and Kleiber, Karl, 3,846,324.

Eckstein, Fritz; and Goody, Roger Sydney, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Thiophosphate analogues of the nucleoside diphosphates and triphosphates and a method for the preparation thereof. 3,846,402, Cl. 260-211.50r.

Ecolotrol, Inc.: *See—*
Jeris, John S.; Beer, Carl; and Mueller, James A., 3,846,289.

Edenhofer, Albrecht; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Heterocyclically dibenzo(a,d)cyclohepta(1,4)dien-5-one derivatives. 3,846,431, Cl. 260-268.0tr.

Edgar, Richard H.; and Peterson, Robert A., to Raytheon Company. Microwave energy applicator. 3,846,606, Cl. 219-10.550.

Edgar, William D.; Sustarsic, John D.; and Kinzler, Raymond C., to Koppers Company, Inc. Coke discharging system. 3,846,252, Cl. 202-262.000.

Edmisten, Walter C.: *See—*
Pappas, Peter G.; Edmisten, Walter C.; and Von Levern, Hobe Schroeder, 3,846,092.

Edmunson, Tillson H. Cut control attachment for chain saws. 3,845,556, Cl. 30-381.000.

Edwards, Elizabeth G. Apparatus for removing grease from pot liquids. 3,846,320, Cl. 210-471.000.

Edwards, Jones Burnett. Lighter socket and screw threads mounting. 3,845,925, Cl. 248-27.000.

Eggenberger, Markus A.: *See—*
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Eggers, Berend: *See—*
Class, Gottfried; and Eggers, Berend, 3,846,234.

Eggert, Ralph H.; and Woods, Quentin T. Unwind stand. 3,845,678, Cl. 82-92.000.

Eguchi, Yoshihiro, to Hochiki Kabushiki Kaisha. Control system for a plurality of loads. 3,846,641, Cl. 307-41.000.

Ehlers, Kenneth W.; and Kunkel, Wulf B., to United States of America, Atomic Energy Commission. Plasma generating device. 3,846,668, Cl. 315-111.000.

Ehnstrom, Lars Karl Johan, to Alfa-Laval AB. Rotary conical strainer drum. 3,846,309, Cl. 210-370.000.

Ehrreich, John E.; and Reti, Adrian R., to Graham Magnetics, Inc. Process for making small particles. 3,846,118, Cl. 75-.5aa.

Eichmanns, Winfried Paul; Finken, Hans-Joachim; and Mager, Guenther Winand, to Saint-Gobain Industries. Process and devices for the winding of continuous fibers-particularly glass fibers-in the form of bobbins. 3,845,912, Cl. 242-18.00r.

Eikonix Corporation: *See—*
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Eisai Co., Ltd.: *See—*
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Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.

Eisenberg, Eugene, to Mack Trucks, Inc. Fuel injection nozzle holder installation. 3,845,748, Cl. 123-32.00r.

Eisler, Paul. Heating methods. 3,846,204, Cl. 156-275.000.

Elco Corporation: *See—*
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Electron Inc.: *See—*
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Electronic Reading Systems: *See—*
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Electronor Corporation: *See—*
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Electrospin Corporation, mesne: *See—*
Senturk, Necdet; and Aschenbrenner, Frank A., 3,845,611.

Elektriska AB Eletta: *See—*
Thorbard, Hugo Adiel; and Thorbard, Bjorn Anders, 3,846,774.

Elliott Brothers (London) Limited: *See—*
Shepherd, Graham, 3,846,769.

Elmore, Glenn V., to International Business Machines Corporation. Method of forming bondable substrate surfaces. 3,846,168, Cl. 117-213.000.

Elmore, Richard R.; and Couch, Benjamin M., to Dura-Plex Industries, Inc. Structural panel and method of making same. 3,846,524, Cl. 264-45.300.

Elpex, Inc.: *See—*
Goldman, Conrad, 3,846,522.

Elsbett, Ludwig. Method of and arrangement for controlling the swirling air layers in the cylinders and combustion chambers of an air-compressing multi-cylinder reciprocable piston internal combustion engine. 3,845,746, Cl. 123-30.00c.

Elsdoerfer, Waldemar J. Measuring head system. 3,845,561, Cl. 33-169.00r.

Elser, Karl Heinz: *See—*
Childers, William Walter; Elser, Karl Heinz; and Peterson, Phillip John, 3,846,840.

Ely, Donald A.; and McKie, Thomas G., to Beloit Corporation. Forming tissue paper by pressing the web while on an upruning forming wire and transferring the web directly to a yankee dryer. 3,846,228, Cl. 162-206.000.

Emerson Electric Co.: *See—*
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Enge, Willi: *See—*
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Blomberg, Folke Ivar; and Engerstam, Marten, 3,845,663.

Engle, Thomas, to General Signal Corporation. Brake system for a light rail vehicle. 3,845,991, Cl. 303-3.000.

English Electric Valve Company Limited: *See—*
King, Robin Charles Moorhouse; and Harris, Neville Wreford, 3,846,664.

Enk, Larry G., to Park-Ohio Industries, Inc. Inductor for inductively heating elongated rotating workpiece. 3,846,609, Cl. 219-10.790.

Enright, James H.; and Wicke, Charles A., to Emerson Electric Co. Compactor. 3,845,707, Cl. 100-53.000.

Entreprise de Recherches et d'Activites Petrolieres (ELF): *See—*
Houot, Jean Jacques, 3,845,973.
Mourlevat, Jean, 3,845,819.

Eppler, William G., Jr., to Cambridge Research & Development Group, Greenberg, Sanford D. and DT Liquidating Partnership. Speech compressor-expander with signal sample zero reset. 3,846,827, Cl. 360-26.000.

Epstein, Henry David, to Texas Instruments Incorporated. Electro-optical display apparatus for signalling warning of predetermined condition ambient compensated. 3,846,775, Cl. 340-244.00r.

Erdmann, David P.; and Kurschner, Dennis L., to Honeywell Inc. Intrusion detection systems. 3,846,790, Cl. 340-258.00d.

Erfinor A.G.: *See—*
Augsburger, Jean-Jacques, 3,846,612.

Erhart, Francis J.; and Schroeder, Harold H., to Xerox Corporation. System for vapor deposition of thin films. 3,845,739, Cl. 118-49.100.

Erickson, Henry; Hindin, Saul G.; Keith, Carl D.; and Mooi, John. Process for preparing a platinum-rhenium catalyst on an alumina support. 3,846,343, Cl. 252-466.0pt.

Eriksson, Henning Emanuel. Noise damping device for motor boats. 3,845,839, Cl. 181-33.00k.

Erneta, Modesto, to NL Industries, Inc. Spheroidal shaped particles of aminoresin-silica polymeric composite. 3,846,453, Cl. 260-39.0sb.

Ernst, Robert R., to Sybron Corporation. Biological sterility indicator and method for using same. 3,846,242, Cl. 195-103.500.

Ernster, John H. Process for utilizing barley malt. 3,846,397, Cl. 260-112.000.

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Ertl, Edward S., to Acoustics Development Corporation. Telephone booths. 3,845,590, Cl. 52-36.000.

Eshelman, Cheston Lee. Pneumatic shock absorbing tire bumper system. 3,845,977, Cl. 293-19.000.

Esper, Friedrich Josef; and Kaiser, Gerhard, to Bosch, Robert, G.m.b.H. Process for making a permanent magnet material. 3,846,323, Cl. 252-62.630.

Esso Production Research Company: *See—*
Blackwell, Robert J.; Kehn, Donald M.; and Whitney, Thomas A., 3,846,310.

Esso Research and Engineering Company: *See—*
Cull, Neville L.; and Vohsberg, Darius B., 3,846,536.

Etablissement Wanderfield & Co.: *See—*
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Ethyl Corporation: *See—*
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Ettenberg, Michael; and Gilbert, Stephen Lee, to RCA Corporation. Method of applying an anti-reflective coating on a semiconductor laser. 3,846,165, Cl. 117-201.000.

Ettinger, Robert H., to General Electric Company. Quick demountable load tap changer terminal. 3,846,742, Cl. 339-263.00r.

Eucken, Harry, to Gottwald, Leo, KG. Telescopic crane jib. 3,845,866, Cl. 212-64.000.

Eue, Ludwig: *See—*
Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,846,513.

Evans, Gordon Homer; and Shennan, Jean Lindsay, to British Petroleum Company Limited, The. Fermentation process for converting hydrocarbons to proteinaceous materials. 3,846,238, Cl. 195-28.00r.

Evans Products Company: *See—*
Heussy, William C.; Vetor, Earl L.; Delaney, Keith P.; and Hyde, Paul E., 3,845,737.

Evans Products Company Transportation Systems Division: *See—*
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Evans, Russell S.: *See—*
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Evans, William J.: *See—*
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Evers, Robert C., to United States of America, Air Force. Thermally stable perfluoroalkylene ether bibenzoxazole polymers. 3,846,376, Cl. 260-61.000.

Evjen, John M.; and Herrin, Jerry, to General Electric Company. System for absorption of explosive energy by pressure mitigation. 3,846,178, Cl. 136-166.000.

Exxon Research and Engineering Company: *See—*
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Wright, Donald L.; and Frankenfeld, John W., 3,846,326.

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Fail Safe Brake Corporation: *See—*
Fontaine, John G., 3,845,932.
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Faillon, Georges: *See—*
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Falkai, Bela Von: *See—*
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Fallwell, William F., Jr., to Monsanto Company. Composition comprising ethylene[vinyl chloride]N-methylolacrylamide terpolymer, starch and a mineral pigment for coating paper. 3,846,354, Cl. 260-17.4st.

Fancher, Llewellyn W., to Stauffer Chemical Company. Plant growth regulators. 3,846,112, Cl. 71-76.000.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Schultz, Fritz, 3,846,544.
Schwarz, Herbert, 3,846,471.

Farfaglia, Silvio T., to Phillips Petroleum Company. Score breaking mechanism for gable top carton. 3,845,607, Cl. 53-378.000.

Farley, Charles Edward; and Grayson, Martin, to American Cyanamid Company. 1,2-Azaphospholanes and their 2-oxides, 2-sulfides and salts and preparation thereof. 3,846,374, Cl. 260-55.10p.

Farmhand, Inc.: *See—*
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Faur, Yvonne Constance; Weisburd, Martin Harold; Wilson, Marion Evans; and May, Paul S. Medium for neisseria and method of cultivating neisseria. 3,846,241, Cl. 195-100.000.

Favre, Marc, & Cie S.A.: *See—*
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Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly

Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich. Tool for shaping articles to pattern. 3,846,611, Cl. 219-69.00e.

Fejer, Mark E.: *See*—
Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., 3,846,565.

Feldman, Nicholas, to Exxon Research and Engineering Company. Middle distillate fuel containing additive combination providing improved filterability. 3,846,093, Cl. 44-62.000.

Felten & Guilleaume Carlswerk Aktiengesellschaft: *See*—
Asselborn, Peter; Cramer, Werner; and Mullejans, Heinrich, 3,846,610.

Feng, Chung Liao. Compact single lens reflex viewing system for cameras. 3,845,699, Cl. 95-42.000.

Ferrara, Achille K. Centrifugal means for drying and applying liquids to articles. 3,845,740, Cl. 118-52.000.

Ferrell, Blount. Eyeglasses. 3,846,017, Cl. 351-106.000.

Ferrentino, Antonio, to Industrie Pirelli Societa per Azioni. Apparatus and process for the continuous manufacture of a waveguide formed by a cylindrical helix. 3,845,549, Cl. 29-600.000.

Ferro Manufacturing Corporation: *See*—
Pickles, Joseph, 3,845,669.
Pickles, Joseph, 3,845,982.

Fields, Harold E. Claw clipper. 3,845,553, Cl. 30-29.000.

Fields, Joseph E.; and Johnson, John H., to Monsanto Company. Process for the separation of virus from non-viral proteins. 3,846,543, Cl. 424-89.000.

Fieri, Anthony J., to American Forest Products Corporation. Box end structure. 3,845,861, Cl. 206-523.000.

Filter, Claus: *See*—
Filter, Walther; and Filter, Claus, 3,845,790.

Filter, Walther; and Filter, Claus, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Aktiengesellschaft and Etablissement Wanderfield & Co. Filling thread tensioning means. 3,845,790, Cl. 139-194.000.

Finike Italiana Marposs-Soc. in Accomandita Semplice di Mario Possati & C.: *See*—
Possati, Mario, 3,846,689.

Finken, Hans-Joachim: *See*—
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Finnen, Gerald W.: *See*—
Keever, Joseph M.; Finnen, Gerald W.; and Ramsey, James E., Jr., 3,846,677.

Firm K. Bratschi Silent Gliss: *See*—
Bratschi, Konrad, 3,845,927.

Firmain, Gerard; and Faillon, Georges, to Thomson-CSF. Valocity modulation tube with frequency multiplication for the continuous generation of high power outputs. 3,846,665, Cl. 315-5.430.

Firstenberg, Harold S. Peripheral rear view mirrors for automobiles. 3,846,016, Cl. 350-302.000.

Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Herbicide. 3,846,113, Cl. 71-91.000.

Fite, Charles C., Jr., to Cities Service Company. Method of manufacturing copper oxalate. 3,846,460, Cl. 260-438.100.

Flash Technology Corporation of America: *See*—
Kearsley, Wayne A., 3,846,750.

Fleisch, William F.; and Pousche, Walter. Easy-to-assemble structure. 3,845,988, Cl. 297-440.000.

Fleming, Paul L., to International Business Machines Corporation. Bulk effect semiconductor oscillator including resonant low frequency input circuit. 3,846,717, Cl. 332-52.000.

Fleming, Robert D. Method for printing an identifying legend on a panoramic dental X-ray film. 3,846,634, Cl. 250-476.000.

Fletcher, Gerald M., to Xerox Corporation. Electrostatic sheet transport system. 3,846,020, Cl. 355-3.00r.

Floden, Bjorn Fritjof: *See*—
Livingston, Daniel K.; Floden, Bjorn Fritjof; Wright, Harry Gilbert; and Tsien, Wei Hwa, 3,845,916.

Floetotto, Reinhard-Heinrich. Building unit for furniture. 3,846,002, Cl. 312-107.000.

Flogaus, William S.; and Masutani, Mitsumasa, to United States of America, Army. Method and apparatus for defocus compensation of a convergent beam scanner. 3,846,007, Cl. 350-6.000.

Flowers, Dervin L., to Motorola, Inc. Semiconductor wafer stabilization process and stabilization solution therefor. 3,846,181, Cl. 148-1.500.

Flynn, Francis Gerard; and Jones, Philip Harry, to Torau Company. Anti-pollution and detergent composition. 3,846,325, Cl. 252-99.000.

Flynn, Joseph C., to Wheaton Industries. Turret lowering mechanism. 3,846,056, Cl. 425-154.000.

FMC Corporation: *See*—
Avramidis, Stellios Antony, 3,845,666.
Cummins, Richard Williamson, 3,846,478.
Ihrig, John Kenneth, 3,846,173.

Focht, John Richard, to Precision Valve Corporation. Snap-in valve. 3,845,888, Cl. 222-402.240.

Folde, Erik Rune. Filling systems. 3,845,794, Cl. 141-83.000.

Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., to Cabot Corporation. Powder metallurgy production of high performance alloys. 3,846,126, Cl. 75-211.000.

Foltz, James Walter: *See*—
Daniels, R. Gary; and Foltz, James Walter, 3,846,687.

Fonseca, Anthony G., to Continental Oil Company. Method for absorbing sulfur oxides from gaseous mixtures and regenerating the absorbent. 3,846,535, Cl. 423-242.000.

Fonseca, John; as trustee for Archer, Albert E.; Hopper, Donald J.; Fonseca, John; Winlund, Lawrence J.; and Lee, Seward: *See*—
Archer, Albert E., 3,846,694.

Fontaine, Guy Hugues; and Ribot, Alain, to Association d'Recherche et d'Entraide Cardiologiques et Angeiologiques. Cardiac stimulators. 3,845,773, Cl. 128-419.00p.

Fontaine, John G., to Fail Safe Brake Corporation. Valve-brake. 3,845,932, Cl. 251-63.400.

Fontaine, John Garfield, to Fail Safe Brake Corporation. Vehicle pedal operated switch. 3,846,599, Cl. 200-61.890.

Ford Motor Company: *See*—
Arnett, Lawrence E.; and Wiggins, Earl M., 3,845,877.
Huff, John C.; Ludwig, Frank A.; and Smith, Arthur G., 3,846,182.
Hull, Neil A.; and Peel, Richard E., 3,845,524.

Forgo, Gabor; Meyer, Erwin; and Moser, Karl, to Zellweger AG. Method for producing printed matter containing images and α-numerical characters. 3,846,150, Cl. 117-17.500.

Forkner, John H., to Pillsbury Company, The. Process for the treatment of coconut. 3,846,562, Cl. 426-44.000.

Formica Corporation: *See*—
Grosheim, Gene Edward, 3,846,217.

Fossati, Charles G. One step method for removing water-insoluble coatings applied to a substrate. 3,846,172, Cl. 134-4.000.

Foster, Howard F. Ground anchor tie-down apparatus. 3,845,597, Cl. 52-166.000.

Foster, Richard C. Solid state keyboard. 3,846,791, Cl. 340-365.00c.

Foster, Thomas Vincent; and Jaeger, Eginhard, to Emhart Corporation. Means for automatically regulating weight of articles in glassware forming machine. 3,846,107, Cl. 65-164.000.

Fowler, Joe R.; and Bryan, John L., to Texaco Inc. Method for making high penetration rate drill bits and two bits made thereby. 3,845,830, Cl. 175-404.000.

Fr. Hesser Maschinenfabrik AG: *See*—
Buchner, Norbert, 3,846,220.

Franco, John Vincent, to Bell Telephone Laboratories, Incorporated. Digital demodulation of frequency-shift keyed data signals. 3,846,708, Cl. 329-104.000.

Franer, Victor R., to Minnesota Mining and Manufacturing Company. Composite film. 3,846,843, Cl. 360-135.000.

Frankenfeld, John W.: *See*—
Wright, Donald L.; and Frankenfeld, John W., 3,846,326.

Frant, Martin: *See*—
Riseman, John H.; and Frant, Martin, 3,846,257.

Franz, Helmut, to PPG Industries, Inc. Selective reflecting metal/metal oxide coatings. 3,846,152, Cl. 117-33.300.

Franz, Karl; and Christigau, Hermann, to Siemens Aktiengesellschaft. Vacuum image converter. 3,846,654, Cl. 313-94.000.

Freedman Seating Company: *See*—
Wahls, Robert A., 3,845,926.

Freiberg, Ashley Herman; and Broadbent, David James, to Stauffer Chemical Company. Stabilized aqueous suspension of phthalimidomethyl mono thio- or dithio-phosphates or phosphonates. 3,846,547, Cl. 424-200.000.

Frey, Peter J.: *See*—
Lintelmann, Willy; and Frey, Peter J., 3,846,773.

Fridman, Viktor Mironovich: *See*—
Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.

Friedenreich, Heinrich; Suck, Bernhard; and Reitsch, Juergen, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Conveyor machine for suspensions and viscous materials having a cage-like housing. 3,845,908, Cl. 241-46.110.

Friedman, David Warren. Equal probability selection circuit. 3,846,757, Cl. 340-166.00r.

Friendship, Kenneth Francis Montague, to Continental Can Company, Inc. Universal filling head. 3,845,791, Cl. 141-6.000.

Friese, Axel; and Simon, Stefan, to Hahn, Carl, Dr., GmbH. Tampon for feminine hygiene. 3,845,767, Cl. 128-285.000.

Fritsch, Rudolf Paul, to Scheer, C. F., & Cie, Firma. Granulator for granulating plastic strands. 3,845,681, Cl. 83-356.300.

Fritz, William Baird; and Reyner, Emerson Marshall, II, to AMP Incorporated. Transmission line balun. 3,846,721, Cl. 333-26.000.

Fritzsche, Helmut: *See*—
Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, 3,846,250.

Frye, Richard L.: *See*—
Cross, Edward A.; and Frye, Richard L., 3,846,312.

Fuchs, Werner: *See*—
Bressel, Ulrich; Fuchs, Werner; and Platz, Rolf, 3,846,472.

Fuji Photo Film Co., Ltd.: *See*—
Oshima, Shigeru, 3,846,813.
Sekine, Jiro, 3,846,807.

Fujii, Akio: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.

Fujikura Cable Works, Ltd., The: *See*—
Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, 3,846,170.

Fujimoto, Keimei: *See—*
Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,846,500.

Fujimoto, Yasuo; and Teranishi, Masayuki. Polyamino acid derivatives and compositions containing same. 3,846,380, Cl. 260-78.00a.

Fujinami, Akira: *See—*
Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Tanaka, Kunihiko; Kishimoto, Teiji; and Zenno, Hisanao, 3,846,432.

Fujishima, Tooru: *See—*
Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.

Fukazawa, Nobuo: *See—*
Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,846,467.

Fuller, Francis W.; Melvin, Samuel L.; and Merritt, Paul H., to Caterpillar Tractor Company. Die forming apparatus. 3,845,654, Cl. 72-381.000.

Fuller, Oliver C., to Evans Products Company Transportation Systems Division. Rack and pinion hopper gate actuating mechanism. 3,845,726, Cl. 105-282.00p.

Furbeck, Warren R.; and Lee, Charles A., to International Paper Company. Method of and apparatus for producing stacks of folded sheet material. 3,845,948, Cl. 270-40.000.

Furner, Raymond L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,846,243.

Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki. Production of alternating copolymers of conjugated dienes and conjugated polar vinyl monomers. 3,846,389, Cl. 260-83.500.

Futaki, Kiyoshi; Kohmura, Isao; and Haino, Kozo, to Mitsubishi Paper Mills, Ltd. Heat sensitive composition and thermal recording sheet containing the same. 3,846,153, Cl. 117-36.900.

GAF Corporation: *See—*
Doe, Lester Adrian, Jr., 3,846,384.
Mestetsky, Thomas S.; and Webster, Bruce G., 3,846,227.
Tiedemann, Herman H., 3,846,272.

Gager, Robert M.: *See—*
Atlee, Zed J.; and Gager, Robert M., 3,846,006.

Gaisser, Eugene J., to American Hoechst Corporation. Printing plate processor and means for opening and closing the same. 3,846,816, Cl. 354-307.000.

Galabov, Angel Simenov: *See—*
Shindarov, Lubomir Mihaylov; Galabov, Angel Simenov; and Antonov, Dimitar Simov, 3,846,491.

Gallone, Patrizio: *See—*
Bianchi, Giuseppe; DeNora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 3,846,273.

Galloway, Charles E.: *See—*
Martner, John G., 3,846,779.

Galvin, Aaron A.; and Shapiro, L. Dennis, to Aerospace Research, Inc. Combined ultrasonic and electromagnetic instrusion alarm system. 3,846,778, Cl. 340-258.00a.

Gandon, Louis; and Solar, Serge, to Le Nickel. Method for producing high-purity nickel powder with predetermined physical characteristics. 3,846,117, Cl. 75-.5aa.

Gapontsev, Valentin Pavlovich: *See—*
Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Alexeev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.

Garbo, Paul W. Method for cleaning liquid filter beds. 3,846,304, Cl. 210-80.000.

Garcia, Felipe G.: *See—*
Bahder, George; and Garcia, Felipe G., 3,846,578.

Gardiner, Derek J., to Iomec Corporation. Multifont selection. 3,845,709, Cl. 101-93.00c.

Garrahan, Richard. Form fit vertical flow diving head gear. 3,845,768, Cl. 128-142.700.

Garver, William Joseph, to AMP Incorporated. Through-hole electrical connector for a circuit board. 3,846,743, Cl. 339-275.00b.

Garwood, Turner G., to Otis Engineering Corporation. Well tools. 3,845,815, Cl. 166-154.000.

Gaskell, Philip Hedley; Loftus, James Peter; and Greengrass, Jane, to Pilkington Brothers Limited. Thermally crystallizing an article while supported in vertical attitude. 3,846,101, Cl. 65-33.000.

Gawel, Len J.: *See—*
Dew, John N.; Boyer, Lyndon D.; and Gawel, Len J., 3,846,244.

Gaydasch, Alexander, to Universal Oil Products Company. Aryl carboxylic acid salts of di(n-octadecyl) amine. 3,846,481, Cl. 260-501.100.

Gaylord, John A., to Koch, H., & Sons, Inc. Survival kit connection to harness. 3,845,525, Cl. 24-201.00a.

Gebauer, Hans, to Hoesch Maschinenfabrik Deutschland. Method and apparatus for the production of helical seam pipe. 3,845,645, Cl. 72-12.000.

Gebhart, Howard C.: *See—*
Wightman, Lawrance W.; Gebhart, Howard C.; and Tichy, Nick, 3,846,619.

Gebruder Junghans G.m.b.H., Firma: *See—*
Kaiser, Hans, 3,845,714.

Gee, David William: *See—*
Nicholls, Lawrence George; and Gee, David William, 3,845,782.

Geerdes, James D., to American Manufacturing Company, Inc. Method of forming expanded composite materials in the absence of recognized blowing agents. 3,846,523, Cl. 264-41.000.

Geissmann, Theodor: *See—*
Vetter, Walter; Mueller, Hanspeter; and Geissmann, Theodor, 3,846,570.

Geisthoff, Hubert, to Walterscheid, Jean, GmbH. Wheel chock for vehicles. 3,845,845, Cl. 188-32.000.

Gelhard, Egon; and Gunkel, H. Rudolf. Self-progressing construction system. 3,845,515, Cl. 14-77.000.

Gendreau, Armand W.: *See—*
Balch, Conrad J.; and Gendreau, Armand W., 3,846,086.

General Electric Company: *See—*
Arnold, Richard B., 3,845,548.
Austin, William E., 3,846,657.
Bell, Gordon M., 3,846,824.
Devlin, Charles L.; and Eggenberger, Markus A., 3,846,739.
Ettinger, Robert H., 3,846,742.
Evjen, John M.; and Herrin, Jerry, 3,846,178.
Germer, Warren R.; and Palmer, Ansell W., 3,846,789.
Hooker, John M., 3,846,662.
Kenworthy, Milton J., 3,845,620.
Razzano, John S., 3,846,464.
Reynolds, Hugh B., 3,845,547.
Roedel, George F., 3,846,358.
Wetherell, Daniel L., 3,846,638.
Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,846,660.

General Electric Company Limited, The: *See—*
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General Instrument Corporation: *See—*
Mears, Donald B., Jr., 3,846,725.

General Motors Corporation: *See—*
Byrd, Walter C., III, 3,845,961.
Hause, Gilbert K., 3,845,674.
Hufstader, Gibson O., 3,845,622.
Johns, Harold W., 3,845,890.
Quinn, Ronald E., 3,846,062.
Scheibe, Elias W., 3,846,052.

General Signal Corporation: *See—*
Engle, Thomas, 3,845,991.

General Tire & Rubber Company, The: *See—*
Hargis, Ivan Glen; and Livigni, Russell A., 3,846,385.

Genuit, Luther L.; and Nowell, John R., to Honeywell Information Systems Inc. Series-parallel dual switching regulator for use with a variety of line voltages. 3,846,695, Cl. 321-27.00r.

Geothermal Investment Co.: *See—*
Hutchinson, Arthur J. L., 3,845,627.

Gerding, Charles Christian, to Jones & Laughlin Steel Corporation. Strip casting apparatus. 3,845,810, Cl. 164-276.000.

German, Lev Solomonovich: *See—*
Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Germer, Warren R.; and Palmer, Ansell W., to General Electric Company. Remote-reading register with error detecting capability. 3,846,789, Cl. 340-347.00p.

Gerretz, Josef; Joeres, Paul; and Zeunert, Fritz, to Wean United, Inc. Tube production. 3,845,649, Cl. 72-189.000.

Gerry, Martin E. Mechanical scanner. 3,846,839, Cl. 360-108.000.

Gerson, Lawrence Gordon. Eyeglasses with selectively tiltable frames. 3,846,018, Cl. 351-120.000.

Gesellschaft fur Kernforschung: *See—*
Class, Gottfried; and Eggers, Berend, 3,846,234.

Gettinger, Joseph. Apparatus for eliminating noxius gases from the exhaust of an internal combustion engine. 3,846,637, Cl. 250-546.000.

Gevaert-Agfa N.V.: *See—*
Monbaliu, Marcel Jacob; and Van Poucke, Raphael Karel, 3,846,444.

Geweke, Werner: *See—*
Boden, Karl; Geweke, Werner; and Scheffer, Dietrich, 3,845,997.

Geweke, Werner, to Padana AG. Bearing systems. 3,845,996, Cl. 308-10.000.

Gibbon, Robert Muir; and Peirpoint, Edward Keith, to Imperial Chemical Industries Limited. Rapid curing organopolysiloxane compositions. 3,846,506, Cl. 260-825.000.

Gibbs, Erich L., to Ultrascience Incorporated. Method and apparatus for use in water purification by reverse osmosis. 3,846,295, Cl. 210-23.000.

Gibney, Kelly B.; and Evans, Russell S., to Canadian Cellulose Company, Limited. Production of cellulose esters from partially purified wood pulp by hemicellulose removal. 3,846,403, Cl. 260-227.000.

Gibs, Gabriel Joseph: *See—*
Weiss, Martin Joseph; Gibs, Gabriel Joseph; Poletto, John Frank; and Remers, William Alan, 3,846,446.

Gibson, Charles I.: *See—*
Boedecker, Kenneth J., Jr.; and Gibson, Charles I., 3,845,936.

Gierlach, Robert W., to Standard Car Truck Company. Snubbed railway truck. 3,845,725, Cl. 105-197.0db.

Gifford, John F. Electroperistalic ion pump. 3,846,274, Cl. 204-299.000.

Gilbert, Harold James. Multi-spindle automatic lathes. 3,845,677, Cl. 82-29.00r.

Gilbert, Stephen Lee: *See—*
Ettenberg, Michael; and Gilbert, Stephen Lee, 3,846,165.

Gilcher, Heinz, to Westinghouse Electric Corporation. Intrusion detection system. 3,846,780, Cl. 340-261.000.

Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna. Method of producing 5-fluorouracil. 3,846,429, Cl. 260-260.00.

Gillespie, Robert M., to Sortex Company of North America, Inc. Controlling article topping and orientation detecting. 3,845,703, Cl. 99-491.000.

Gilligan, William H.; and Adolph, Horst G., to United States of America, Navy. Nitro substituted acrylic acid amides. 3,846,493, Cl. 260-561.00n.

Gilson, Paul R. Bistable flow control valve. 3,845,777, Cl. 137-119.000.

Girling Limited: *See—*
Nicholls, Lawrence George; and Gee, David William, 3,845,782.

Givaudan Corporation: *See—*
Wild, Jost; and Sigg-Grutter, Trudi, 3,846,498.

Glascock, Homer H.: *See—*
Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,846,660.

Glaser, David; and Kupsky, George A., to Burroughs Corporation. Display panel with raster scanning means. 3,846,669, Cl. 315-169.00r.

Glaxo Laboratories Limited: *See—*
Kennedy, James; Long, Alan Gibson; and Underwood, William George Elphinstone, 3,846,416.

Globe-Union Inc.: *See—*
Desai, Ramesh R., 3,846,175.
Towle, Warren Ladd; Mrotek, Edward Norman; and Wiethaup, Robert Roland, 3,846,180.

Glover, John W., to Darf Corporation. Power take-off connection. 3,845,832, Cl. 180-14.00r.

Glucksman, Dov Z., to Intermatic Incorporated, mesne. Blower and heater unit. 3,846,617, Cl. 219-370.000.

Gogola, Joseph K.: *See—*
Roteman, Jerome; and Gogola, Joseph K., 3,846,151.

Golbeck, Bernard J.; and Lewandowski, Raymond F., to Oak Industries, Inc. Pushbutton switch with position indicator. 3,845,736, Cl. 116-124.00r.

Goldfarb, Adolph E.; and Benkoe, Erwin. Knock-down boxing figure toys. 3,845,956, Cl. 273-85.00f.

Goldman, Arthur J.: *See—*
Jones, Cecil R.; Goldman, Arthur J.; and Rowe, D. Garth, 3,846,235.

Goldman, Conrad, to Elpex, Inc. Forming of thermoplastic polymers. 3,846,522, Cl. 264-25.000.

Golec, Josef W., to Norprint Limited. Labelling devices. 3,846,221, Cl. 161-159.000.

Gooch, Beverley R.; and Schiller, Edward, to Ampex Corporation. Method of manufacturing a magnetic head. 3,845,550, Cl. 29-603.000.

Good, Paul F. Machine for filling luncheon dough into mold cans. 3,845,793, Cl. 141-67.000.

Goody, Roger Sydney: *See—*
Eckstein, Fritz; and Goody, Roger Sydney, 3,846,402.

Goodyear Tire & Rubber Company, The: *See—*
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Gordon, David A.: *See—*
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Gorlina, Inna Leonidovna: *See—*
Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.

Goscenski, Edward J., Jr., to Eaton Corporation. Differential drive mechanism. 3,845,672, Cl. 74-711.000.

Gosset, Cyrille, to Societe Industrielle Honeywell Bull (Societe Anonyme). Electronic keyboard including program memory means and program selecting means. 3,846,758, Cl. 340-172.500.

Goto, Kenji; and Nakamura, Michiya, to Toyota Jidosha Kogyo Kabushiki Kaisha. Manifold reactor. 3,845,621, Cl. 60-282.000.

Gottlieb Binder Holzgerlingen: *See—*
Waller, Norbert, 3,845,641.

Gottwald, Leo, KG: *See—*
Eucken, Harry, 3,845,866.

Gould Inc.: *See—*
Sabatino, Anthony, 3,845,542.

Grabast, Edwin F. Mobile trailer garage with convertible furnishings. 3,845,980, Cl. 296-23.00r.

Grac, Zdenek: *See—*
Zahalka, Jindrich; Plander, Emil; and Grac, Zdenek, 3,846,268.

Grace, W. R., & Co.: *See—*
Poteet, Charles S., III, 3,846,529.

Graf, Walter Luttrell, to Du Pont de Nemours, E. I., and Company. Apparatus. 3,846,330, Cl. 252-361.000.

Graham Magnetics, Inc.: *See—*
Ehrreich, John E.; and Reti, Adrian R., 3,846,118.

Gray, Charles John: *See—*
Barker, Sidney Alan; and Gray, Charles John, 3,846,306.

Gray, Keith W.: *See—*
Martner, John G., 3,846,779.

Grayson, Leonard W. Twin drive system. 3,845,670, Cl. 74-465.000.

Grayson, Martin: *See—*
Farley, Charles Edward; and Grayson, Martin, 3,846,374.

Green, Wilbur. Inclinometer. 3,845,570, Cl. 33-401.000.

Greenberg, Sanford D.: *See—*
Eppler, William G., Jr., 3,846,827.

Greene, Henry E., Jr., to Waldon Devices, Inc. Garden hose evacuating device. 3,845,779, Cl. 137-209.000.

Greenfield, Stanley A., to Rohm & Haas Company. 1,3-Dithietanes. 3,846,448, Cl. 260-327.00m.

Greengrass, Jane: *See—*
Gaskell, Philip Hedley; Loftus, James Peter; and Greengrass, Jane, 3,846,101.

Gregory, John G.; Marsh, White; and Trepp, Robert M., to Westinghouse Electric Corporation. Apparatus for optimal data storage. 3,846,762, Cl. 340-172.500.

Gregory, Richard Langton: *See—*
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Griffin, James L.: *See—*
Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., 3,845,540.

Griffiths, Frederick J.: *See—*
Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., 3,845,540.

Griggs, David Thurston. Single oral input real time analyzer with written print-out. 3,846,586, Cl. 179-1.0sa.

Grinberg, Efim Naumovich: *See—*
Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.

Griswold, Azel Alan, to Burlington Industries, Inc. Synchronous process for thermally-curable blocked polyurethanes. 3,846,378, Cl. 260-77.5tb.

Grosheim, Gene Edward, to Formica Corporation. Postformable thermoset resin containing fibrous laminate and process of postforming the same. 3,846,217, Cl. 161-88.000.

Gross, Albert, to Kulzer & Co., GmbH. Acrylic tooth-filling composition containing boric acid-releasing compound. 3,846,542, Cl. 424-81.000.

Grotta, Henry M., to United States of America, Health, Education and Welfare. Nonthrombogenic plastic material and method for making the same. 3,846,353, Cl. 260-9.000.

Groundwater, Fergus M. Apparatus for heat sealing thermoplastic films. 3,846,210, Cl. 156-583.000.

Grundstrom, Karl-Johan: *See—*
Wahren, Douglas; Norman, Bo; and Grundstrom, Karl-Johan, 3,846,230.

Gruppo Lepetit S.p.A.: *See—*
Nathansohn, Giangiacomo; Winters, Giorgio; and Odasso, Gianfranco, 3,846,412.

Guay, Wilbur J., to Newmont Exploration Limited. Method of increasing the cyanidation recoverability of gold from organic carbon-containing gold-bearing ores. 3,846,124, Cl. 75-112.000.

Gueguen, Michel, to International Standard Electric Corporation. Electronically step-by-step rotated directive radiation beam antenna. 3,846,799, Cl. 343-833.000.

Guenard, Jeanette: *See—*
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.

Guerci, Carlo; and Vigliermo, Amerigo, to Olivetti, C., Ing., & C. S.p.A. Automatic-control electronic apparatus for machine tools including provision for zero offset. 3,846,680, Cl. 318-685.000.

Guichard, Jean, to Centre d'Etudes Techniques des Industries de l'Habillement. Method of forming braided elongated openings. 3,845,732, Cl. 112-264.000.

Gulf & Western Industrial Products Company: *See—*
Lederman, Burton E.; and Boudrie, Jack D., 3,846,223.

Gulf & Western Manufacturing Company: *See—*
Michelson, Anatol; and Pace, Clifford, 3,845,652.

Gulf Degremont, Inc.: *See—*
Duff, Joseph H., 3,846,303.

Gulf Research & Development Company: *See—*
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,846,285.
Chun, Sun W.; and Montagna, Angelo A., 3,846,288.

Gulf Resources & Chemical Corporation, mesne: *See—*
Hoffman, Doyt K.; and Bach, Ricardo O., 3,846,494.

Gulla, Michael, to Webline Corporation, The. Electroless copper plating. 3,846,138, Cl. 106-1.000.

Gunkel, H. Rudolf: *See—*
Gelhard, Egon; and Gunkel, H. Rudolf, 3,845,515.

Gunn, John B., to International Business Machines Corporation. Microwave oscillator. 3,846,714, Cl. 331-107.00g.

Gunsher, Jeffrey A.; and Pews, R. Garth, to Dow Chemical Company, The. Isopropylidene bis(2,6-dihalo-p-phenylene) bis(poly-halophenyl) carbonates. 3,846,469, Cl. 260-463.000.

Gunson's Colorplugs Limited: *See—*
Thring, John Meredith, 3,846,655.

Gurevich, Ljudmila Ivanovna: *See—*

Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich, 3,845,662.

Gurevich, Vladimir Zakhrovich: *See*—
Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich, 3,845,650.

Guth, Eugene D.: *See*—
Blumenthal, Jack L.; and Guth, Eugene D., 3,846,339.

Gutner, Kenneth H.: *See*—
Kaplan, Edward L.; and Cless, Gerhard, 3,846,001.

Guttmann, Stephan: *See*—
Stadler, Paul; Stutz, Peter; and Guttmann, Stephan, 3,846,433.

Guzman, Angel: *See*—
Crabbe, Pierre; and Guzman, Angel, 3,846,475.

Habermeier, Juergen; and Porret, Daniel, to Ciba-Geigy AG. Glycidyl hydantoin compounds. 3,846,442, Cl. 260-309.500.

Hackenberg, Robert A., to Robertson Paper Box Co., Inc. Collapsible compartmented box. 3,845,898, Cl. 229-28.00r.

Hadden, Donald L.: *See*—
LeNay, Tom W.; and Hadden, Donald L., 3,846,794.

Haga, Kazuo: *See*—
Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki, 3,846,389.

Hagen, Werner, to Maschinenfabrik Niehoff-Kommanditgesellschaft. Method and apparatus for winding wire. 3,845,913, Cl. 242-25.00r.

Hahn, Carl, Dr., GmbH: *See*—
Friese, Axel; and Simon, Stefan, 3,845,767.
Simon, Stefan, 3,845,520.

Haigh, Richard Wolliscroft. Electric sound-producing device. 3,846,792, Cl. 340-384.00e.

Haino, Kozo: *See*—
Futaki, Kiyoshi; Kohmura, Isao; and Haino, Kozo, 3,846,153.

Halberstadt, Ernst. Process for producing pewter effects. 3,846,157, Cl. 117-64.00r.

Halko, Andrew R.; and Hughes, Allan B., to Halko Manufacturing Company, Inc. Composite casting apparatus. 3,845,531, Cl. 29-33.00c.

Halko Manufacturing Company, Inc.: *See*—
Halko, Andrew R.; and Hughes, Allan B., 3,845,531.

Hall, John S.: *See*—
Butts, Ernest O.; and Hall, John S., 3,845,594.

Hall, William G.; and Pittman, Paul F., to Westinghouse Electric Corporation. Surveillance system including means for detecting impending failure in high pressure, high temperature fluid conducting pipes. 3,845,657, Cl. 73-88.50r.

Halliburton Company: *See*—
Tinsley, John M., 3,845,824.

Halliger, Leonhard; and Schroder, Horst, to SKF Industrial Trading and Development Company, B.V. System for securing a bearing about a shaft. 3,846,034, Cl. 403-351.000.

Hallinan, John N.; and Costner, William F. Method of making a cast polyester resin structure having a core of low grade material. 3,846,534, Cl. 264-225.000.

Hamaker, Ralph A., to Xerox Corporation. Foraminous sheet registration system. 3,845,951, Cl. 271-243.000.

Hamano, Yoshimasa: *See*—
Muto, Giichi; Takata, Yoshinori; and Hamano, Yoshimasa, 3,846,270.

Hambock, Heinz: *See*—
Bader, Jorg; Hambock, Heinz; Sturm, Elmar; and Weiss, Anton Georg, 3,846,438.
Traber, Walter; Hambock, Heinz; and Weiss, Anton Georg, 3,846,555.

Hambro Structural Systems Limited: *See*—
Butts, Ernest O.; and Hall, John S., 3,845,594.

Hamburg, Fokko Wessel: *See*—
Bruijn, Engelbertus Jacobus; Hamburg, Fokko Wessel; Kanij, Johannes Bastiaan Willem; and De Rooy, Robert, 3,846,520.

Hamilton, Brian K., to Allied Chemical Corporation. Restraint metal chip coolant and separator. 3,845,971, Cl. 280-150.0ab.

Hamilton of Indiana, Inc., mesne: *See*—
Stein, Edward H., 3,846,011.

Hamilton, Samuel L. Proportioning moisture sensing device for refrigeration systems. 3,846,730, Cl. 338-34.000.

Hammann, Ingeborg: *See*—
Schrader, Gerhard; and Hammann, Ingeborg, 3,846,514.

Hammar, Paavo Henrikki: *See*—
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Hammond Lead Products, Inc.: *See*—
Nordyke, John S.; and Spangenberg, William C., 3,846,148.

Hammond, Roland P., to United States of America, Atomic Energy Commission. Interceptor for preventing ship collisions with offshore power stations and the like. 3,845,633, Cl. 61-46.500.

Handjani, Rose-Marie, nee Vila; and Zabotto, Arlette, nee Arribau, to Societe Anonyme dite: L'Oreal. Water-in-oil emulsions, cosmetic products made therefrom and method of making said cosmetic products. 3,846,556, Cl. 424-364.000.

Hansen, Charles C.; and Nilles, John D., to Refrigerating Specialties Co. Check valve for pulsating flows. 3,845,781, Cl. 137-331.000.

Hanson Design, Inc.: *See*—
Hanson, James E., 3,845,555.

Hanson, James E., to Hanson Design, Inc. Bottle cutter. 3,845,555, Cl. 30-164.900.

Hara, Kazuhiko: *See*—
Irie, Tatsuhiko; Hara, Kazuhiko; and Kuroyanagi, Akihiro, 3,845,899.

Harada, Akikazu: *See*—
Hisada, Hiroshi; and Harada, Akikazu, 3,846,667.

Harada, Isao; and Ryuka, Fumitaka, to Hojitsu Kogyo Co., Ltd. Ball joint device. 3,846,032, Cl. 403-140.000.

Harada, Seiki: *See*—
Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, 3,846,166.

Harada, Taro; Ito, Nobuo; and Ohishi, Kanemitsu, to Sumitomo Chemical Company, Limited. Polypropylene composition and foamed polypropylene sheet therefrom. 3,846,349, Cl. 260-2.5ha.

Hargis, Ivan Glen; and Livigni, Russell A., to General Tire & Rubber Company, The. Preparation of solution polymers using a barium Di-tert alkoxide and a Di-butyl magnesium catalyst complex. 3,846,385, Cl. 260-80.700.

Harings, Horst; deceased (by Enge, Willi; administrator). Fuel proportioning system for a combustion engine. 3,845,750, Cl. 123-139.0aw.

Harmon, Emerson R., to Amalga Corporation, The. Current limiting device. 3,846,727, Cl. 337-246.000.

Harper, David John; and McKellar, John Forgie, to Imperial Chemical Industries Limited. Plastics compositions. 3,846,395, Cl. 260-94.9gc.

Harper, Marie R.; and Blea, Maxine R. Utensil storage unit. 3,846,005, Cl. 312-248.000.

Harris, Della. Panty hose stocking. 3,845,506, Cl. 2-224.00r.

Harris, James Leslie. Scraper attachment. 3,845,517, Cl. 15-93.00b.

Harris, Neville Wreford: *See*—
King, Robin Charles Moorhouse; and Harris, Neville Wreford, 3,846,664.

Harrison, Frank B.: *See*—
Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.

Harsco Corporation: *See*—
Reed, Edward A., 3,845,885.

Hart, William H., to Electronic Reading Systems. Pattern recognition system. 3,846,755, Cl. 340-146.3ac.

Hartness, Thomas P. Removing bottle caps. 3,845,605, Cl. 53-3.000.

Harvey, Bernard A.: *See*—
Renna, Nicholas, Jr.; Madison, Theodore C.; and Harvey, Bernard A., 3,846,744.

Haslberger, Josef. Method and device for preparing gravel. 3,845,905, Cl. 241-26.000.

Hass, Eduard. Spring cage for use in a tablet dispensing receptacle. 3,845,882, Cl. 221-279.000.

Hatano, Itaru: *See*—
Matsumura, Shoichi; and Hatano, Itaru, 3,846,392.

Hause, Gilbert K., to General Motors Corporation. Transmission controls for low torque shifting. 3,845,674, Cl. 74-878.000.

Hautala, Earl: *See*—
Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., 3,846,572.

Hawera Probst KG Hartmetall Werkzeugfabrik Ravensburg: *See*—
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Hawkes, David Alec: *See*—
Mayorcas, Reginald; and Hawkes, David Alec, 3,846,120.

Hay, Harold R. Apparatus for solar distillation. 3,846,251, Cl. 202-234.000.

Hay, William C. Waste water purification system. 3,846,296, Cl. 210-27.000.

Hayes, John C., to Universal Oil Products Company. Trimetallic catalytic composite and uses thereof. 3,846,282, Cl. 208-139.000.

Heberlein & Co., AG: *See*—
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Hedbom, Christina: *See*—
Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, 3,846,445.

Heier, Robert J.: *See*—
Decker, Alfred S.; Duff, John R.; and Heier, Robert J., 3,845,851.

Heinert, Dietrich H., to Dow Chemical Company, The. Fire retardant polyurethanes containing trichloroethylene/vinyl acetate copolymer. 3,846,508, Cl. 260-859.00r.

Heinrich, Wilhelm. Display shelving. 3,845,864, Cl. 211-153.

Heintz, Richard D. Removable cowling cover for vehicles. 3,845,983, Cl. 296-84.000.

Heithoff, Robert B., to PPG Industries, Inc. Apparatus and method for the manufacture of float glass having a thickness greater than equilibrium thickness. 3,846,102, Cl. 65-65.00a.

Heizer, Marshall B., Jr. Chair lift. 3,845,933, Cl. 254-8.00r.

Helgesson, Ulf R.: *See*—
Malmrose, Gerald E.; and Helgesson, Ulf R., 3,845,838.

Hellmen, Sven Rolf Bertil: *See*—
Berntell, John Osvald; and Hellmen, Sven Rolf Bertil, 3,845,626.

Hellmig, Erhard; Moll, Franz; Randolph, August; and Saleck, Wilhelm, to Agfa-Gevaert Aktiengesellschaft. Light-sensitive photographic material with increased sensitivity to light. 3,846,135, Cl. 96-68.000.

Helms, Clifford J., to Data Products Corporation. Belt printer. 3,845,711, Cl. 101-111.000.

Hemming, Raymond Charles: *See*—
Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, 3,846,594.

Hempenius, Walter L.; Valenti, Joseph; and Moser, Robert E., to Quaker Oats Company, mesne. Process of making a base for protein beverages. 3,846,560, Cl. 426-18.000.

Henault, Claude, to Regie Nationale des Usines Renault and Automobiles Peugeot. Anti-pollution control devices for internal combustion engines. 3,846,076, Cl. 23-254.00e.

Henderlite, James H., III, to Air Knife Inc. Electric heating apparatus for removing textile waste material. 3,846,618, Cl. 219-373.000.

Henkel & Cie GmbH: *See—*
Wollmann, Klaus; Ploger, Walter; and Worms, Karl-Heinz, 3,846,420.

Henry, Loic: *See—*
Diguet, Daniel; and Henry, Loic, 3,846,169.

Henry, Robert J., to Bethlehem Steel Corporation. Method of treating steel rail. 3,846,183, Cl. 148-12.000.

Henschen, Homer Ernst: *See—*
Carter, Clyde Thomas; and Henschen, Homer Ernst, 3,846,735.

Hensley, Albert L., Jr.; and Nevitt, Thomas D., to Standard Oil Company (Indiana). Catalyst containing an oxide of technetium as a promoter. 3,846,342, Cl. 252-465.000.

Herbots, Joseph Antonine: *See—*
Van Paesschen, August Jean; and Herbots, Joseph Antonine, 3,846,134.

Herr, Ernest A. Electronic automatic reset switch circuit and electronic keyboard musical instrument incorporating it. 3,845,684, Cl. 84-1.010.

Herr, Robert W.; Sigl, Edward D.; and Aksamit, Marion W., to Bowmar Instrument Corporation. Thermal printer. 3,845,850, Cl. 197-1.00r.

Herreman, Walter G.: *See—*
Ayers, Clifton E.; and Herreman, Walter G., 3,845,537.

Herrin, Jerry: *See—*
Evjen, John M.; and Herrin, Jerry, 3,846,178.

Herrmann, Gunter, to Bayern-Chemie Gesellschaft fur Flugchemische Antriebe mit beschrankter Haftung. Shock absorption system for a motor vehicle. 3,845,970, Cl. 280-150.0ab.

Hervieu, Rene. Simulator for ship navigation. 3,845,571, Cl. 35-10.200.

Herzig, Wolfgang: *See—*
Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, 3,846,587.

Hess, Earl H.; Kennedy, Daniel M.; and Whitman, Charles I., to International Copper Research Association, Inc. Stable copper base fungicides. 3,846,545, Cl. 424-143.000.

Hesse, Karl-Dieter: *See—*
Seeliger, Wolfgang; and Hesse, Karl-Dieter, 3,846,419.

Hessert, James E.: *See—*
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Hettler, Hans: *See—*
Murayama, Akira; Hettler, Hans; and Jastorff, Bernd, 3,846,401.

Heussy, William C.; Vetor, Earl L.; Delaney, Keith P.; and Hyde, Paul E., to Evans Products Company. Endless belt processing apparatus. 3,845,737, Cl. 118-8.000.

Hibino, Sohei: *See—*
Takagi, Shigeyuki; Kawashima, Isamu; Takagi, Katsuyuki; and Hibino, Sohei, 3,846,644.

Hierholzer, Frank J., Jr.; and Ancona, John A., to Emerson Electric Co. Bimetal actuator with electrical resistance heater. 3,846,726, Cl. 337-107.000.

Higginbotham, Gordon John Spencer; and Cuckson, Kenneth, to Rolls-Royce (1971) Limited. Apparatus for casting directionally solidified articles. 3,845,808, Cl. 164-258.000.

Higgins, Edward Robert, to Westinghouse Electric Corporation. Direct current to direct current chopper inverter. 3,846,691, Cl. 321-2.000.

Highway Manufacturing Company: *See—*
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Higuchi, Hisayuki; and Maki, Michiyoshi, to Hitachi, Ltd. Method of manufacturing semiconductor devices. 3,846,167, Cl. 117-212.000.

Higuchi, Takeru: *See—*
Theeuwes, Felix; and Higuchi, Takeru, 3,845,770.

Hildenbrand, Rupert: *See—*
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Hilgenbrink, John T., to Continental Can Company, Inc. Double stage necking. 3,845,653, Cl. 72-354.000.

Hill, Anthony, to General Electric Company Limited, The. Peak amplitude follower circuit. 3,846,692, Cl. 321-8.00r.

Hill, Eugene Emerson; and Scrimshaw, Marvin Seymour. Electronic scanning switch. 3,846,745, Cl. 340-6.00r.

Hill, Harold Wayne, Jr.; and Moberly, Charles W., to Phillips Petroleum Company. Resinous adhesives and production thereof. 3,846,511, Cl. 260-880.00r.

Hill, Larry G. Yogurt-containing dough composition and baked product made therefrom. 3,846,561, Cl. 426-19.000.

Himes, Harris D.: *See—*
Dunlap, Charles R.; and Himes, Harris D., 3,845,745.

Himmele, Walter; and Aquila, Werner, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of -naphthols. 3,846,497, Cl. 260-592.000.

Hinachi, Matatoyo: *See—*
Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.

Hindin, Saul G.: *See—*
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Hino, Naganori: *See—*
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Hipkiss, Richard C.: *See—*
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Hirai, Hajime: *See—*
Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, 3,846,500.

Hirakawa, Hiroshi; and Sakai, Toshiyuki, to Yokohama Rubber Co., Ltd., The. Process for enhancing the adhesion between steel cord and a rubber compound. 3,846,160, Cl. 117-79.000.

Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, to Sumitomo Chemical Company, Limited. Insecticidal compositions and methods of killing insects using N-allyl phosphorothioamidates. 3,846,552, Cl. 424-216.000.

Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., to Olin Corporation. Recovery of chlorine and cyanuric acid values from polychloroisocyanuric acid and salts thereof. 3,846,424, Cl. 260-248.00a.

Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, to Hitachi, Ltd. High voltage regulation circuit for a color television receiver. 3,846,673, Cl. 315-400.000.

Hirsch, Mahlon E.: *See—*
Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.

Hirschmann, Ralph F.; and Denkewalter, Robert G., to Merck & Co., Inc. Method for controlled stepwise synthesis of polypeptides utilizing N-thiocarboxy anhydrides of amino acids as reagents. 3,846,398, Cl. 260-112.500.

Hirschmann, Ralph F.; and Denkewalter, Robert G., to Merck & Co., Inc. Process for controlled stepwise synthesis of polypeptides. 3,846,399, Cl. 260-112.500.

Hirst, Richard John: *See—*
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Hisada, Hiroshi; and Harada, Akikazu, to Hitachi, Ltd. Magnetron having external choke structure. 3,846,667, Cl. 315-39.530.

Hitachi, Ltd.: *See—*
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Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.
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Takahashi, Kazuya; Sato, Mitsuya; Ohta, Kaname; and Takamiya, Tadashi, 3,846,711.

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Hochberg, Frederick: *See—*
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Hochiki Kabushiki Kaisha: *See—*
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Hochstrasser, Rolf, to Oehler-, Wyhlen- Lagertechnik AG. System for positioning a vehicle. 3,845,715, Cl. 164-1.00r.

Hocker, James P., to Corning Glass Works. Electrical heating unit. 3,846,620, Cl. 219-543.000.

Hoehn, Hans; and Denzel, Theodor, to Squibb, E. R., & Sons, Inc. Sulfur derivatives of pyrazolo(3,4-b)pyridines. 3,846,437, Cl. 260-294.80c.

Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
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Hoesch Maschinenfabrik Deutschland: *See—*
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Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, to Bayer Aktiengesellschaft Leverkusen. 2-Chloroethane-(thiono)phosphonic acid esters. 3,846,513, Cl. 260-960.000.

Hoffman, Doyt K.; and Bach, Ricardo O., to Gulf Resources & Chemical Corporation, mesne. Dialkylamide adducts of lithium cyanide. 3,846,494, Cl. 260-561.00r.

Hoffmann, Fritz, to Siemens Aktiengesellschaft. Dual-pressure high-voltage compressed-gas insulated electric circuit breaker. 3,846,602, Cl. 200-148.00e.

Hoffmann-La Roche Inc.: *See—*
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,846,431.

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.
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Hojitsu Kogyo Co., Ltd.: *See*—
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Holce, Thomas J.; and Huckins, Charles M., to Kentrox Industries, Inc. Telephone trunk signaling link circuit. 3,846,589, Cl. 179-98.000.
Hollweck, Walter; Schnee, Wilhelm; Eberl, Karlheinz; and Wagner, Kurt, to Inter Control Herman Kohler Elektrik GmbH & Co. KG. Device for securing a temperature sensor to a vessel wall. 3,845,661, Cl. 73-343.00r.
Holmstrom, William L., to Caterpillar Tractor Company. Replaceable cutting edge with plural tangs. 3,845,578, Cl. 37-141.00r.
Holt, William C., Jr.: *See*—
Youtsey, Karl J.; Holt, William C., Jr.; and Carnahan, Robert D., 3,846,140.
Holzmann, Karl, to Badische Uhrenfabrik GmbH. Pendulum clock. 3,845,617, Cl. 58-129.000.
Holzwarth, Herbert, to Siemens & Halske Aktiengesellschaft. Telecommunication systems. 3,846,588, Cl. 179-15.0fe.
Honeywell Inc.: *See*—
Erdmann, David P.; and Kurschner, Dennis L., 3,846,790.
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Riikonen, Douglas L., 3,846,763.
Honrath, Kurt; and Naumann, Wilhelm, to Klockner-Humboldt-Deutz Aktiengesellschaft. Fabricated tube control cam shafts. 3,845,667, Cl. 74-567.000.
Hooker Chemical Corporation: *See*—
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Hooker, John M., to General Electric Company. Alpha-numeric display type electron discharge device. 3,846,662, Cl. 313-496.000.
Hopwood, Charles E. Signaling system and sensor. 3,846,748, Cl. 340-71.000.
Hori, Kyoichi: *See*—
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,846,488.
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Horovitz, Beatrice; and Savage, Michael Gary, to Sperry Rand Corporation. Clean air system for magnetic storage disk pack. 3,846,835, Cl. 360-98.000.
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Horvath, Gabor: *See*—
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Hotten, Bruce W., to Chevron Research Company. Dioxan-containing aluminum lubricant. 3,846,319, Cl. 252-49.500.
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Householder, Kermit W.; and Doesburg, Van I., to Dow Corning Corporation. Antifoam composition. 3,846,329, Cl. 252-358.000.
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Howard, Alan Norman, to Pharmacia A/B. Treatment of hypercholesteremia. 3,846,541, Cl. 424-79.000.
Howard, H. Keith. Apparatus for applying closure strips to plastic film. 3,846,209, Cl. 156-502.000.
Howard, Larry J. Engine with resilient piston. 3,845,691, Cl. 91-325.000.
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Hromas, Leslie A.: *See*—
Thompson, Thomas R.; and Hromas, Leslie A., 3,845,921.
Huber, John Richard, to Eastern Rotorcraft Corporation. Swivelled cargo release device. 3,845,978, Cl. 294-83.00r.
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Holce, Thomas J.; and Huckins, Charles M., 3,846,589.
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Huffman, Coy L., Jr. Article finishing machine. 3,845,588, Cl. 51-139.000.
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Hughes, D. A., Affiliates, Inc.: *See*—
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Lindner, Gisela, 3,845,644.
Hume, Alister C., to MacMillan Bloedel Research Limited. Screw conveyor for particulate material. 3,845,856, Cl. 198-213.000.
Hunnicutt, Vaughn E.: *See*—
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Horst, Wilfried; Schuppler, Emil; and Santen, Horst, 3,845,803.
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Huskins, Homer L., to Ragan, Brad, Inc. Assembly and method for bonding tread material to a tire body. 3,846,201, Cl. 156-96.000.
Hutchinson, Arthur J. L., to Geothermal Investment Co. Power generation from hot brines. 3,845,627, Cl. 60-641.000.
Huver, Lawrence L.: *See*—
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Hwang, Yih-Shen: *See*—
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ICI America Inc.: *See*—
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ICN Pharmaceuticals, Inc.: *See*—
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Ideal Industries Incorporated: *See*—
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Ideal Toy Corporation: *See*—
Reinertsen, Tormod K., 3,845,958.
Ihms, James Ernest. Apparatus for stereoscopic photography. 3,846,810, Cl. 354-117.000.
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Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.
Ikeda, Yukio, to Plus Ika Kogyo Kabushiki Kaisha. Drainage fluid removing device. 3,845,765, Cl. 128-277.000.
Ikekawa, Nobuo; and Morisaki, Masuo, to Eisai Co., Ltd. Process for the preparation of 25-hydroxycholesterol and esters thereof. 3,846,455, Cl. 260-397.200.
Immethun, Peter A., to Ethyl Corporation. Method of making a sandwich panel construction. 3,846,203, Cl. 156-265.000.
Impco Carburetion, Inc.: *See*—
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Imperial Chemical Industries Limited: *See*—
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Koronka, Paul; and Hirst, Richard John, 3,845,730.
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Inbar, Dan: *See*—
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Interlake, Inc.: *See*—
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International Computer Limited: *See*—
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International Copper Research Association, Inc.: *See*—
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International Cybernetic Machines Limited: *See*—
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International Minerals & Chemical Corporation: *See*—
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International Nickel Company, Inc., The: *See*—
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International Paper Company: *See*—
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International Standard Electric Corporation: *See*—
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International Telephone and Telegraph Corporation: *See*—
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Interroyal Corporation: *See*—
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Iomec Corporation: *See*—
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Iowa Manufacturing Company: *See*—
Lillig, Floyd A.; and Spangler, Edward O., 3,845,906.

Irie, Tatsuhiko; Hara, Kazuhiko; and Kuroyanagi, Akihiro, to Matsushita Electric Works, Ltd. Electromagnetic counter. 3,845,899, Cl. 235-92.00c.

Irons, Henry R.: *See*—
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Ironside, John Michael, to Lucas, Joseph, Electrical Limited. Engine control systems. 3,846,760, Cl. 340-172.500.

Irwin, Edgar L.: *See*—
Lampe, Donald R.; and Irwin, Edgar L., 3,846,820.

Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, to Fujikura Cable Works, Ltd., The. Method of forming electrically insulating chemical conversion coating on aluminum wires. 3,846,170, Cl. 117-218.000.

Iseda, Yutaka: *See*—
Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki, 3,846,389.

Ishida, Hiroaki: *See*—
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Ishii, Mitsuaki: *See*—
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ISM Corporation: *See*—
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Itek Corporation: *See* –
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Ito, Ikoh; Ito, Shokiro; and Emura, Tomoyuki, to Sumitomo Chemical Company, Limited. Process for producing polyvinyl chloride in the presence of alkyl thioglycolate as a chain transfer agent. 3,846,390, Cl. 260-86.300.

Ito, Kikuo: *See*—
Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.

Ito, Nobuo: *See*—
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Ito, Shokiro: *See*—
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Ito, Sukenao: *See*—
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Itoh, Takashi; Nakashima, Akio; and Arakawa, Yoshihiro, to Hitachi, Ltd. Horizontal automatic frequency control circuit. 3,846,584, Cl. 178-69.5tv.

Ivanov, Mark Efremovich: *See*—
Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.

Ivanoz, Alexei Ivanovich: *See*—
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Iwama, Atsuaki: *See*—
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Jackman, Richard L. Boat propulsion means. 3,845,733, Cl. 115-28.00r.

Jackson, Byron, Inc.: *See*—
Sullivan, Wayne N., 3,845,784.

Jackson, William B. Oven enclosure for a grill. 3,845,753, Cl. 126-9.00r.

Jacobs, Justin M., Jr.; and Stafford, Neil S. Highly improved transportation system. 3,845,723, Cl. 105-147.000.

Jacobus, William N., Jr.; and Ku, San-Mei, to International Business Machines Corporation. Minimizing cross-talk in L. E. D. arrays. 3,846,193, Cl. 148-187.000.

Jacques, James O., to Intelligent Memory Systems, Inc. Stacked flexible disc unit with head plugs. 3,846,837, Cl. 360-99.000.

Jaeger, Eginhard: *See*—
Foster, Thomas Vincent; and Jaeger, Eginhard, 3,846,107.

Jaffe, Joseph, to Chevron Research Company. Hydroconversion process. 3,846,284, Cl. 208-216.000.

Jaffe, Joseph; and Reed, Echol M., Jr., to Chevron Research Company. Hydrodesulfurization. 3,846,287, Cl. 208-216.000.

James, Jesse C., 25% to Martin, Charles D. Vehicle for rough and muddy terrain. 3,845,831, Cl. 180-8.00f.

Japan Atomic Energy Research Institute: *See*—
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Japan Exlan Company Limited: *See*—
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Japan Gasoline Co., Ltd.: *See*—
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Jastorff, Bernd: *See*—
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Jeanmairet, Pierre; and Paroz, Andre, to Favre, Marc, & Cie S.A. Lever escapement for a timepiece movement. 3,845,616, Cl. 58-121.00r.

Jenkins, Garry W. Package for disposal of chewing gum. 3,845,858, Cl. 206-233.000.

Jenny, Robert W., to Boeing Company, The. Landing gear truck pitch damping. 3,845,919, Cl. 244-103.00r.

Jeris, John S.; Beer, Carl; and Mueller, James A., to Ecolotrol, Inc. Waste treatment process. 3,846,289, Cl. 210-8.000.

Jeunink, Gerardus Alfonsus: *See*—
Hunting, Bernardus Jacobus; and Jeunink, Gerardus Alfonsus, 3,846,146.

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Johansson, Inge J. G. Grinding apparatus for vegetable materials. 3,845,909, Cl. 241-65.000.

Johns, Harold W., to General Motors Corporation. Garment hook and garnish molding retainer. 3,845,890, Cl. 224-42.10c.

Johnson, Charles S.: *See*—
Baker, William O.; and Johnson, Charles S., 3,845,510.

Johnson, Clark E., Jr.; and Richman, Peter L., to Micro Communications Corporation. Sound reproducing apparatus in which the drive means operates in response to a prerecorded control signal. 3,846,831, Cl. 360-74.000.

Johnson, Edward P.; and Waite, Ross E. Measuring apparatus. 3,845,883, Cl. 222-30.000.

Johnson, Everett M., to Texaco Inc. Fuel-dispensing nozzle seal. 3,845,792, Cl. 141-46.000.

Johnson, James C., to Hunt Electronics Company. Light dimming system for controlling brightness and rate of change of brightness of lights. 3,846,671, Cl. 315-291.000.

Johnson, John H.: *See*—
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Johnson, Olof C., Jr.: *See*—
Apsell, Sheldon P.; Johnson, Olof C., Jr.; and Whitney, Robert W., 3,846,783.

Johnson, Ralph S. Ski binding apparatus. 3,845,964, Cl. 280-11.35k.

Johnson, Robert Allen, to Deere & Company. Tapered keyway checking gauge. 3,845,567, Cl. 33-174.00e.

Johnson, Robert Allen; and Raisbeck, Wesley Paul, to Deere & Company. Tapered bore checking gauge. 3,845,568, Cl. 33-174.00e.

Johnson, Walker P.; Cotton, Charles C.; Bon, David R.; and Peterson, Trules L., to United States of America, Navy. Helicopter cargo lifting system. 3,845,937, Cl. 258-1.800.

Johnson, Wallace H. Elevator system. 3,845,842, Cl. 187-15.000.

Jolly, Clarence Harold, to Comalco Limited (formerly K/a Comalco Industries Pty., Limited). Window drain valve. 3,845,599, Cl. 52-209.000.

Jones & Laughlin Steel Corporation: *See*—
Gerding, Charles Christian, 3,845,810.

Jones, Cecil R.; Goldman, Arthur J.; and Rowe, D. Garth, to Transfer Systems, Incorporated. Failure indicator for nuclear reactor fuel element. 3,846,235, Cl. 176-80.000.

Jones, Cecil Roy, to Transfer Systems Incorporated. Early warning material failure indicator. 3,846,795, Cl. 340-421.000.

Jones, Henry B.: *See*—
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Jones, Philip Harry: *See*—
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Jones, William H.: *See*—
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Jossic, Alain Francois, to Societe Honeywell Bull (Societe Anonyme). Feeding device for direct current motor. 3,846,684, Cl. 318-257.000.

Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., to Texas Instruments, Incorporated. High gain relays and systems. 3,846,679, Cl. 317-132.000.

Jurchenko, Nikolai Petrovich; Chubarov, Evgeny Arkadievich; Pisarenko, Ivan Nikolaevich; and Starikova, Ljudmila Anatolievna. Method of manufacturing welding electrodes. 3,846,613, Cl. 219-145.000.

Jurisch, Ewald: *See*—
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Jwuc, Karl J., to Midland-Ross Corporation. Car coupler. 3,845,867, Cl. 213-121.000.

Kabushiki Kaisha Fujikoshi: *See*—
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
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Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna. Method for producing phosphate catalyst. 3,846,338, Cl. 252-437.000.

Kado, Masaru: *See*—
Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, 3,846,115.

Kagei, Kengo: *See*—
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.

Kahle, Gerald R.: *See*—
Schiff, Sidney; and Kahle, Gerald R., 3,846,316.

Kahn, David, to AMP Incorporated. Liquid level sensor. 3,846,776, Cl. 340-244.00r.

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. N-benzyloxycarbonyl-dopa derivatives. 3,846,476, Cl. 260-471.00c.

Kaiser, Gerhard: *See*—
Esper, Friedrich Josef; and Kaiser, Gerhard, 3,846,323.

Kaiser, Hans, to Gebruder Junghans G.m.b.H., Firma. Electric detonator system for projectiles. 3,845,714, Cl. 102-70.20r.

Kalle Aktiengesellschaft: *See*—
Schmidt, Willi Johann; and Lumb, Hugo, 3,845,915.

Kallmes, Otto Julius, to Lodding Engineering Corporation. Flow systems for inducing fine-scale turbulence. 3,846,229, Cl. 162-216.000.

Kaman Aerospace Corporation: *See*—
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Kamata, Hiroshi: *See*—
Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, 3,846,115.

Kameda, Nobuyuki: *See*—
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Kaminski, William: *See*—
Condon, Joseph Henry; and Kaminski, William, 3,846,582.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
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Kanij, Johannes Bastiaan Willem: *See*—
Bruijn, Engelbertus Jacobus; Hamburg, Fokko Wessel; Kanij, Johannes Bastiaan Willem; and De Rooy, Robert, 3,846,520.

Kankaanpaa, Matti, to Valmet Oy. Twin-wire paper forming with wires wrapping around a suction web-forming breast roll and then following a curved path to a suction couch roll. 3,846,232, Cl. 162-301.000.

Kankaanpaa, Matti, to Valmet Oy. Papermaking machine having a single wire run and a double wire run over a downwardly curving detwatering box. 3,846,233, Cl. 162-312.000.

Kanner, Bernard: *See*—
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Kapff, Sixt Frederick: *See*—
Tulumello, Angelo; and Kapff, Sixt Frederick, 3,846,074.

Kaplan, Edward L.; and Cless, Gerhard, to Gutner, Kenneth H. Plastic guide for drawer. 3,846,001, Cl. 308-3.600.

Kaplan, Reuben A. Method of making a disposable precharged coffee bag. 3,846,569, Cl. 426-394.000.

Kappus, Helmut: *See*—
Rodermund, Gerd; and Kappus, Helmut, 3,846,212.

Karden, Karl Gosta; Westerberg, Sven Peter Johas; and Astrom, Klas Johan, to Atlas Copco Aktiebolag. Nut runner with pressure means to hold torque clutch member disengaged. 3,845,673, Cl. 74-751.000.

Karnas, Joseph. Mechanical reef. 3,845,630, Cl. 61-4.000.

Kasai, Masayoshi, to Hitachi, Ltd. Post acceleration type cathode ray tube with perforated hollow collector electrode adjacent shadow mask. 3,846,658, Cl. 313-408.000.

Kasamatsu, Takuo. Apparatus for assembling electrical circuits for experimentation. 3,845,573, Cl. 35-19.00a.

Kasuga, Toshishige: *See*—
Campbell, Goerge Thomas Richardson; and Kasuga, Toshishige, 3,845,865.

Katamoto, Kazuyoshi: *See*—
Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.

Kataoka, Nobuyuki: *See*—
Furukawa, Junji; Iseda, Yutaka; Haga, Kazuo; and Kataoka, Nobuyuki, 3,846,389.

Katayama, Hitoshi: *See*—
Yamaguchi, Isao; and Katayama, Hitoshi, 3,846,019.

Katchka, Jay R., to Robertshaw Controls Company. Flame spreader with stress relief for a burner. 3,846,064, Cl. 431-285.000.

Kato, Jinichi: *See*—
Sobajima, Masaru; and Kato, Jinichi, 3,846,008.

Kato, Toshiaki: *See*—
Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.

Katsuda, Yoshio: *See*—
Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, 3,846,551.

Katt, Herbert L. Post. 3,846,030, Cl. 403-2.000.

Kaufman, Arnold: *See*—
Rosas, Carlos B.; Wantuck, Joseph A.; and Kaufman, Arnold, 3,846,435.

Kavesh, Sheldon, to Allied Chemical Corporation. Liquid quenching of free jet spun metal and ceramic filaments. 3,845,805, Cl. 164-89.000.

Kawakami, Koichi, to Yoshida Kogyo Kabushiki Kaisha. Zip fastener chain for trouser flies. 3,845,526, Cl. 24-205.00r.

Kawanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Automatic clearing device. 3,846,624, Cl. 235-144.00e.

Kawashima, Isamu: *See*—
Takagi, Shigeyuki; Kawashima, Isamu; Takagi, Katsuyuki; and Hibino, Sohei, 3,846,644.

Kazmina, Natalya Borisovna: *See*—
Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Kearsley, Wayne A., to Flash Technology Corporation of America. Day-night flash beacon. 3,846,750, Cl. 340-105.000.

Keene, Charles I., to Smith, Herman P. Pedestal mounted wind generator. 3,846,042, Cl. 416-110.000.

Keever, Joseph M.; Finnen, Gerald W.; and Ramsey, James E., Jr., to Westinghouse Electric Corporation. Plastic watthour meter cover having an indexed and protected front face. 3,846,677, Cl. 317-107.000.

Kehler, Paul, to Applied Inventions Corporation. Gamma ray differential density probe. 3,846,631, Cl. 250-269.000.

Kehn, Donald M.: *See*—
Blackwell, Robert J.; Kehn, Donald M.; and Whitney, Thomas A., 3,846,310.

Keith, Carl D.: *See*—
Erickson, Henry; Hindin, Saul G.; Keith, Carl D.; and Mooi, John, 3,846,343.

Keller Spezialtechnik GmbH: *See—*
Rhotert, Bernhard, 3,845,679.

Kelly, Daniel E.; Theed, Robert W.; and Beckerman, Martin. Denture liner. 3,845,558, Cl. 32-3.000.

Kennedy, Carl D.: *See—*
McGuire, Stephen E.; Kennedy, Carl D.; and Stauter, John C., 3,845,862.

Kennedy, Daniel M.: *See—*
Hess, Earl H.; Kennedy, Daniel M.; and Whitman, Charles I., 3,846,545.

Kennedy, James; Long, Alan Gibson; and Underwood, William George Elphinstone, to Glaxo Laboratories Limited. Cephalosporin compounds. 3,846,416, Cl. 260-243.00c.

Kentrox Industries, Inc.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 3,846,589.

Kenworthy, Milton J., to General Electric Company. Cooling film promoter for combustion chambers. 3,845,620, Cl. 60-39.650.

Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts. 3,846,482, Cl. 260-502.40p.

Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts and esters thereof. 3,846,483, Cl. 260-502.40p.

Kessler, Hans-Joachim: *See—*
Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,846,428.

Kest, Donald O. Method of making elastomer-based pressure sensitive adhesive coated article. 3,846,163, Cl. 117-122.0pa.

Keyes Fibre Company: *See—*
Crabtree, Kenneth L., 3,845,896.

Khlyntsev, Alexandr Sergeevich: *See—*
Shubin, Vladimir Nikolaevich; Silantiev, Viktor Sergeevich; Khlyntsev, Alexandr Sergeevich; and Barsova, Antonina Petrovna, 3,845,648.

Kiess, Ronald J.: *See—*
Douglas, Carl L.; Evans, William J.; Kiess, Ronald J.; and Sutton, Robert A., 3,845,875.

Kiko, Frederick John, to Bell Telephone Laboratories, Incorporated. Differential amplifier with dynamic biasing. 3,846,712, Cl. 330-30.00d.

Kikuchi, Yasunobu: *See—*
Arai, Hiroshi; Ohta, Jun; and Kikuchi, Yasunobu, 3,846,747.

Killian, Gerald I. Archer's finger tab. 3,845,504, Cl. 2-21.000.

Kim, Robert H.; and White, Lawrence D., to Westinghouse Electric Corporation. Bi-polar pulse generator. 3,846,645, Cl. 307-260.000.

Kimberly-Clark Corporation: *See—*
Lecompte, Archie R., Jr., 3,846,292.

Kimura, Fumihiko: *See—*
Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, 3,846,331.

Kindvall, Frank: *See—*
Warden, Hans Erik; Kindvall, Frank; and Berg, Carls Olof, 3,845,946.

King, Robin Charles Moorhouse; and Harris, Neville Wreford, to English Electric Valve Company Limited. Coupled cavity travelling wave tubes. 3,846,664, Cl. 315-3.600.

Kinne, Frank E.; and Carmack, Phil D., to Permatank Engineering & Mfg. Co., Inc. Method for manufacturing foam sandwich panels. 3,846,525, Cl. 264-46.500.

Kinoshita, Tomoo: *See—*
Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.

Kinzler, Raymond C.: *See—*
Edgar, William D.; Sustarsic, John D.; and Kinzler, Raymond C., 3,846,252.

Kirby, John Ashley, to Colonnese, Louis J. and Batcheller, George C., Co., Inc. Brassiere worn breast prosthesis. 3,845,507, Cl. 3-36.000.

Kirkunov, Alexandr Eliseevich: *See—*
Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.

Kishimoto, Teiji: *See—*
Tanaka, Kunihiko; Kishimoto, Teiji; and Zenno, Hisanao, 3,846,432.

Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Power switch control in electric shutter. 3,846,815, Cl. 354-234.000.

Kitamura, Shigeyoshi; Hirai, Hajime; Okuno, Yositosi; and Fujimoto, Keimei, to Sumitomo Chemical Company, Ltd. Diphenylmethane derivatives. 3,846,500, Cl. 260-611.00a.

Kittel, Harold James, to Drake, R. L., Company. Method and apparatus for tuning an amplifier circuit. 3,846,713, Cl. 330-192.000.

Kiuchi, Kuninosuke: *See—*
Isawa, Kazuo; Maejima, Masatsugu; Kiuchi, Kuninosuke; Yokota, Ken; and Ogawa, Masaru, 3,846,170.

Kiyohara, Takehiko; and Taguchi, Tetsuya, to Canon Kabushiki Kaisha. Exposure control circuit structure. 3,846,805, Cl. 354-23.000.

Kleiber, Karl: *See—*
Lohmann, Frank; Eckhardt, Claude; and Kleiber, Karl, 3,846,324.

Klein, Dieter H., to Dow Chemical Company, The. High solids content vinylidene chloride polymer dispersions in strongly hydrogen bonded dispersing media and process of preparation thereof. 3,846,828, Cl. 260-33.40r.

Klein, Erwin, to BBC Aktiengesellschaft Brown, Boveri & Cie. Multicelled mounting frame for static converter modules. 3,846,678, Cl. 317-120.000.

Klievoneit, Harold R. Radial surface finishing apparatus. 3,845,587, Cl. 51-118.000.

Kliger, Howard S.: *See—*
Brown, James E.; Woods, Andrew B.; and Kliger, Howard S., 3,846,797.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Honrath, Kurt; and Naumann, Wilhelm, 3,845,667.
Wagner, Gerhard, 3,845,514.

Kloefkorn, Earl W. Auxiliary fuel feeding system for a vehicle. 3,845,841, Cl. 180-54.00r.

Klopovsky, Boris Alexeevich: *See—*
Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.

Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, to Recklinghausen, Carl Still, Firma. Coke quenching method and device. 3,846,250, Cl. 201-39.000.

Knebel, Gustav, to Heberlein & Co., AG. False-twist device. 3,845,613, Cl. 57-77.400.

Knowlton, Barry R.: *See—*
Thomm, Ernest C.; and Knowlton, Barry R., 3,846,507.

Knunyants, Ivan Ljudvigovich: *See—*
Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Kobayashi, Takashi; Aida, Masaaki; Mita, Tooru; and Nishi, Takayuki, to Hitachi, Ltd. Covered wire wrapping apparatus. 3,845,536, Cl. 29-203.0dt.

Kobe, Joze; Springer, Robert H.; and O'Brien, Darrell E., to ICN Pharmaceuticals, Inc. Pyrazolo(1,5-a)1,3,5-triazines. 3,846,423, Cl. 260-248.0ns.

Kobe Steel, Ltd.: *See—*
Yoshida, Soushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, 3,846,058.

Koch, H., & Sons, Inc.: *See—*
Gaylord, John A., 3,845,525.

Koch, Wolfgang: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.

Koch-Light Laboratories Limited: *See—*
Barker, Sidney Alan; and Gray, Charles John, 3,846,306.

Koen, Cornelis: *See—*
Alagy, Jacob; Cha, Bernard; and Koen, Cornelis, 3,846,079.

Kogure, Tetsuo: *See—*
Nagai, Yoichiro; Ojima, Iwao; and Kogure, Tetsuo, 3,846,463.

Kohler, Alfred, to SWF-Spezialfabrik fur Aulozubehor Gustav Rou GmbH. Wiper bearing for a windshield wiper for motor vehicles. 3,846,000, Cl. 308-238.000.

Kohmura, Isao: *See—*
Futaki, Kiyoshi; Kohmura, Isao; and Haino, Kozo, 3,846,153.

Kokan Camera Laboratory Company Limited: *See—*
Sakamoto, Isamu, 3,845,731.

Kokeisl, Theodor. Device for metering flowable solids from a container. 3,845,886, Cl. 222-241.000.

Kolze, Lawrence A.; and Jones, William H., to Eaton Corporation. Means for calibrating pressure switches at extra-low pressure settings. 3,846,600, Cl. 200-83.00s.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*
Berntell, John Osvald; and Hellmen, Sven Rolf Bertil, 3,845,626.

Komoda, Tsutomu, to Hitachi, Ltd. Electron gun device having a field emission cathode tip protected from destruction due to ion impingement. 3,846,663, Cl. 315-3.000.

Koninklijke Nederlandsche Hoogovens en Staalfabrieken, N.V.: *See—*
van Laar, Jacobus, 3,846,068.

Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, to Kureha Kagaku Kogyo Kabushiki Kaisha. Solvent composition for dyes for use in pressure-sensitive copying paper. 3,846,331, Cl. 252-364.000.

Konnai, Makoto; Kamata, Hiroshi; and Kado, Masaru, to Kumiai Chemical Industry Co., Ltd. Herbicidal Composition. 3,846,115, Cl. 71-100.000.

Koon, Howard T. Vacuum casting furnace. 3,845,807, Cl. 164-255.000.

Koppers Company, Inc.: *See—*
Edgar, William D.; Sustarsic, John D.; and Kinzler, Raymond C., 3,846,252.

Korochkin, Petr Evmenovich: *See—*
Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.

Koronka, Paul; and Hirst, Richard John, to Imperial Chemical Industries Limited. Agricultural apparatus. 3,845,730, Cl. 111-88.000.

Korotenko, Boris Evdokimovich; Korotenko, Vitaly Borisovich; and Shtepa, Pavel Korneevich. Unipolar electric transmission. 3,846,653, Cl. 310-102.000.

Korotenko, Vitaly Borisovich: *See—*
Korotenko, Boris Evdokimovich; Korotenko, Vitaly Borisovich; and Shtepa, Pavel Korneevich, 3,846,653.

Koryagina, Elizaveta Ivanovna: *See—*

Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Alexeev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.

Kosarek, Daniel. Three-dimensional block puzzle. 3,845,959, Cl. 273-153.00s.

Kostecky, James F., to Bethlehem Steel Corporation. Metal wall framing system. 3,845,601, Cl. 52-290.000.

Koyanagi, Yukio: *See*—
Sakamoto, Yoichi; and Koyanagi, Yukio, 3,846,707.

Kraft, Edwin H.: *See*—
Bornstein, Norman S.; and Kraft, Edwin H., 3,846,159.

Kramer, John F. Fluid conduit arrangement. 3,846,083, Cl. 29-157.00r.

Krasnoff, Eugene L., to Improved Machinery Inc. Clarifying apparatus and methods for influent waters. 3,846,299, Cl. 210-44.000.

Krause, Konrad A. Vacuum tape threading system. 3,846,832, Cl. 360-85.000.

Krauss-Maffei Aktiengesellschaft: *See*—
Bohn, Gerhard; Winkle, Gunther; and Wende, Helmut, 3,845,720.

Kravchenko, Valery Borisovich: *See*—
Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Alexeev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.

Kravets, Arkady Timofeevich: *See*—
Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.

Kravets, Sergei Semenovich: *See*—
Kremnev, Oleg Alexandrovich; Borovsky, Vladimir Rudolfovich; Kravets, Sergei Semenovich; Alexeev, Nikolai Fedorovich; Tsvetkov, Vladislav Arkhipovich; and Bogdanovsky, Vladimir Borisovich, 3,846,571.

Kremnev, Oleg Alexandrovich; Borovsky, Vladimir Rudolfovich; Kravets, Sergei Semenovich; Alexeev, Nikolai Fedorovich; Tsvetkov, Vladislav Arkhipovich; and Bogdanovsky, Vladimir Borisovich. Process of treatment of smoked-and-dried meat. 3,846,571, Cl. 426-45.000.

Kretschmer, Reinhard: *See*—
Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.

Krick, Paul J., to International Business Machines Corporation. Fixed threshold variable threshold storage device for use in a semiconductor storage array. 3,846,768, Cl. 340-173.00r.

Krieg, Adrian H., to Widder Corporation. Press brakes. 3,845,655, Cl. 72-389.000.

Krokhin, Alexandr Alexandrovich: *See*—
Rabodzei, Nikolai Vasilievich; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich, 3,846,632.

Kronish, Donald P.; Zuriff, Lee S.; Young, William D.; and Lewandowski, Paul R., to Warner-Lambert Company. Moisture barrier. 3,846,247, Cl. 195-12.00t.

Krupp, Fried., Gesellschaft mit beschrankter Haftung: *See*—
Schatz, Oskar; and Dieckmann, Uwe, 3,845,979.

Ku, San-Mei: *See*—
Jacobus, William N., Jr.; and Ku, San-Mei, 3,846,193.

Kubitzker, Harry; Falkai, Bela Von; and Reichle, Alfred, to Bayer Aktiengesellschaft. Continuous spinning and stretching process of the production of polyamide-6 filaments. 3,846,532, Cl. 264-210.00f.

Kuchar, Paul J., to Universal Oil Products Company. Homogenized particulate matter for spray drying. 3,845,801, Cl. 159-48.00r.

Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, to Bayer Aktiengesellschaft. 2-Methoxy-5-fluorobenzyl n,n-dimethylthiolcarbamate. 3,846,467, Cl. 260-455.00a.

Kuh, Arthur D., to Eastman Kodak Company. Dye diffusion transfer compositions, elements and processes. 3,846,129, Cl. 96-3.000.

Kuhl, Dieter, to Siemens Aktiengesellschaft. Fuel cell encased in molded plastic material. 3,846,176, Cl. 136-86.00r.

Kuhn, Robert: *See*—
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Kuihara, Kenzo: *See*—
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Kuki, Michio: *See*—
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Kukucka, William P.: *See*—
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Kulikov, Jury Nikolaevich: *See*—
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Kulzer & Co., GmbH: *See*—
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Kumiai Chemical Industry Co., Ltd.: *See*—
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Kun, Leslie C., to Union Carbide Corporation. Finned primary surface heat exchanger. 3,845,814, Cl. 165-148.000.

Kunitskaya, Galina Mikhailovna: *See*—
Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna, 3,846,490.

Kunkel, Wulf B.: *See*—
Ehlers, Kenneth W.; and Kunkel, Wulf B., 3,846,668.

Kunkle, John Philip; and Barnes, Ronald Bruce, to AMP Incorporated. Circuit board post type terminal. 3,846,741, Cl. 339-221.00r.

Kunsman, Laurence D., to Westinghouse Electric Corporation. High strength high conductivity aluminum alloy windings in large core form transformers. 3,845,551, Cl. 29-605.000.

Kunz, Albrecht, to Uniboard AG. Wood-chip boards. 3,846,219, Cl. 161-119.000.

Kuo, Mau-Jung: *See*—
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Kuo, Ted L. C., to Thomas & Betts Corporation. Electrical splice. 3,846,577, Cl. 174-84.00c.

Kupchan, Solomon Morris. Process for obtaining a germine, adduct from germine values. 3,846,434, Cl. 260-287.00r.

Kupsky, George A.: *See*—
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Konishi, Akio; Takahashi, Masaaki; Kimura, Fumihiko; and Toguchi, Takehisa, 3,846,331.

Kurhi, Jaakko. Optical printer. 3,846,022, Cl. 355-53.000.

Kuroki, Katuro: *See*—
Sakakura, Akira; Matsumoto, Fumio; Ueno, Kiyoshi; Takashima, Junihide; and Kuroki, Katuro, 3,846,187.

Kuroyanagi, Akihiro: *See*—
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Kurschner, Dennis L.: *See*—
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Kusaka, Shunichi: *See*—
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Kusters, Eduard: *See*—
Kusters, Eduard; and Appenzeller, Valentin (said Appenzeller assor. to said), 3,845,534.

Kusters, Eduard; and Appenzeller, Valentin, said Appenzeller assor. to said Kusters, Eduard. Grooved roller and method of making same. 3,845,534, Cl. 29-130.000.

Kuth, Robert: *See*—
Langmann, Werner; and Kuth, Robert, 3,846,070.

Kuwada, Yutaka: *See*—
Meguro, Kanji; and Kuwada, Yutaka, 3,846,421.

Kuzniak, Bernard. Material handling apparatus. 3,845,950, Cl. 271-194.000.

Kwok, Wo Kong, to Du Pont de Nemours, E. I., and Company. Process for continuously producing polyhexamethylene adipamide by carrying out water removal step in a formic acid vapor containing atmosphere. 3,846,381, Cl. 260-78.00r.

Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, to Sharp Kabushiki Kaisha. Self renewing stylus structure. 3,846,802, Cl. 346-74.00e.

L & C Steinmuller, G.m.b.H.: *See*—
Plura, Georg, 3,846,298.

Labelle, Harold E., Jr.; Mlavsky, Abraham I.; and Cronan, Charles J., to Tyco Laboratories, Inc. Production of crystalline bodies of complex geometries. 3,846,082, Cl. 23-301.0sp.

Laboratories Jacques Loglais: *See*—
Maillard, Jacques Georges; and Langlois, Michel, 3,846,485.

Labude, Wolfgang; and Bauer, Karl-Heinz, to FA. "PREH, Elektrofeinmechanische Werke Jakob Preh, NACHF.". Tuner housing with contact bridge means. 3,846,732, Cl. 338-133.000.

Lachampt, Felix; Viout, Andre; and Vanlerberghe, Guy, to Societe Anonyme dite: L'Oreal. Emulsions, and cosmetic products made from such emulsions. 3,846,546, Cl. 424-170.000.

Lacroix, Andre Roger Camille: *See*—
Arhan, Roger Pierre; and Lacroix, Andre Roger Camille, 3,846,681.

Ladouceur, Harold A.; and Matthews, John H., to Multifastener Corporation. Fastener strip. 3,845,860, Cl. 206-338.000.

Lagache, Michel; Ranson, Claude; and Tillon, Nicole, to Regie Nationale des Usines Renault and Rhone Progil. Methods of manufacturing polyester resins impregnated fibrous compositions. 3,846,164, Cl. 117-126.0gb.

Laing, Nikolaus. Centrifugal pumps having rotatable pole rings supported in contactless bearings. 3,846,050, Cl. 417-420.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes George Claude: *See*—
Pelloux-Gervais, Pierre, 3,845,974.

Lamhofer, Gerhard: *See*—
Reinecke, Herbert; Adler, Kalus; Bauer, Johann; Kretschmer, Reinhard; Lamhofer, Gerhard; and Pichler, Engelbert, 3,846,362.

Lampe, Donald R.; and Irwin, Edgar L., to Westinghouse Electric Corporation. Mosaic for IR imaging using pyroelectric sensors in a bipolar transistor array. 3,846,820, Cl. 357-31.000.

Landgraf, Helmut: *See*—
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Lang, Konrad: *See*—

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Langdo, Steven H.: *See—*
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Langdon, Michael Guy, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for the Environment in Her Britannic Majesty's Government of the. Guidance apparatus for track following vehicles. 3,845,719, Cl. 104-130.000.

Langen, Jacobus J.: *See—*
Langen, Marinus J. M.; and Langen, Jacobus J., 3,845,852.

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Ziff, Louis J., 3,845,583.

Larson, Floyd Gotthard, Jr.; and Snape, Edwin, to International Nickel Company, Inc., The. Method for producing nickel catalyst. 3,846,344, Cl. 252-466.00j.

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Apple, Joseph P., Jr.; and Lauterbach, William E., 3,845,638.

Laven, Thomas R., to Western States Machine Company, The. Motor controlled valve for continuously feeding viscous liquids. 3,845,788, Cl. 137-604.000.

Lavoie, Raymond R.: *See—*
Joanis, Norman R.; and Lavoie, Raymond R., 3,845,554.

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Lawley, Wraymon Randle; and Lawley, Tommy Joe, 3,845,945.

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Le Nickel: *See—*
Gandon, Louis; and Solar, Serge, 3,846,117.

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Lear, William P., 3,846,065.

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Lebel, Pierre: *See—*
Casset, Georges; Driffort, Jean-Pierre; and Lebel, Pierre, 3,846,659.

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Lederman, Burton E.; and Boudrie, Jack D., to Gulf & Western Industrial Products Company. Conductive plastic article and method for making same. 3,846,223, Cl. 161-162.000.

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Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., 3,846,660.

Lee, Charles A.: *See—*
Furbeck, Warren R.; and Lee, Charles A., 3,845,948.

Lee, Hong H.: *See—*
Crosby, William E.; and Lee, Hong H., 3,846,231.

Lee, James M.: *See—*
Chu, William M.; Lee, James M.; and Luckett, Gary C., 3,846,643.

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Chase, Herbert S., 3,845,727.
Cobb, Donald E., 3,845,512.

Leeds, Winthrop M., to Westinghouse Electric Corporation. Compressed-gas circuit interrupter. 3,846,601, Cl. 200-148.00b.

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Lehmann, Alfred H., to Pratt-Read Corporation. Keyboard for electronic musical instrument. 3,845,683, Cl. 84-1.010.

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LeNay, Tom W.; and Hadden, Donald L., to Baker Industries, Inc. Alarm retransmission system. 3,846,794, Cl. 340-415.000.

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DeAntoni, Jacques; and Eche, Raymonde, 3,846,430.

Leslie, Donald J.: *See—*
O'Brien, Roy E.; Leslie, Donald J.; and Leslie, Michael R., 3,845,967.

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Levy, Leon B., to Celanese Corporation. Novel catalyst for conversion of olefins to unsaturated aldehydes and acids. 3,846,336, Cl. 252-435.000.

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Golbeck, Bernard J.; and Lewandowski, Raymond F., 3,845,736.

Lewicki, Walter J., Jr., to Armstrong Cork Company. Screen printing method. 3,845,712, Cl. 101-129.000.

Ley, Kurt: *See—*
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Leynaert, Jacky R.: *See—*
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Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, 3,846,587.

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Liebert, Horst. Machine for compacting, pelletizing and/or briquetting. 3,845,708, Cl. 100-155.000.

Liepa, Alexander Leon; and O'Connor, David Evans, to Procter & Gamble Company, The. Preparation of meat flavor concentrates from heat-treated slurried meat, water, and ascorbic acid. 3,846,568, Cl. 426-364.000.

Lillig, Floyd A.; and Spangler, Edward O., to Iowa Manufacturing Company. Mechanical accumulators for roll crushers. 3,845,906, Cl. 241-32.000.

Lin, Frank W., to Caelus Memories, Inc. Read-write servo track copy system. 3,846,829, Cl. 360-46.000.

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Voloshin, Petr Stepanovich; Ivanov, Mark Efremovich; Klopovsky, Boris Alexeevich; Lindin, Viktor Mikhailovich; Novitsky, Boris Georgievich; Olevsky, Viktor Markovich; and Fridman, Viktor Mironovich, 3,845,901.

Lindner, Gisela, to Hulter, Heinr., Jr., Firma. Permutation lock. 3,845,644, Cl. 70-74.000.

Lindsay Specialty Products Limited: *See—*
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Lintelmann, Willy; and Frey, Peter J. Battery operated surveillance device. 3,846,773, Cl. 340-237.00s.

Lintzenich, Vincent G., to Shell Oil Company. Lubricant compositions containing phosphoramidate derivatives. 3,846,317, Cl. 252-46.700.

Lipton, Thomas J., Inc.: *See—*
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Lira, Emil P.; Barker, Walter M.; and McCrae, Robert C., to International Minerals & Chemical Corporation. 6-Amino-9-(substituted benzyl) purines and their N^1-oxides. 3,846,426, Cl. 260-252.000.

Lire, Gordon C. Low friction sole pad for ski bindings. 3,845,965, Cl. 280-351.00c.

List, William F., to Westinghouse Electric Corporation. Energy conversion apparatus. 3,846,028, Cl. 356-218.000.

Litton Systems, Inc.: *See—*
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Livigni, Russell A.: *See—*
Hargis, Ivan Glen; and Livigni, Russell A., 3,846,385.

Livingston, Daniel K.; Floden, Bjorn Fritjof; Wright, Harry Gilbert; and Tsien, Wei Hwa, to RCA Corporation. Cartridge for elongated record medium. 3,845,916, Cl. 242-197.000.

Ljubimov, Evgeny Mikhailovich: *See*—
Rabodzei, Nikolai Vasilievich; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich, 3,846,632.

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Lodige, Fritz: *See*—
Lodige, Wilhelm; Lodige, Fritz; and Lucke, Josef, 3,845,940.

Lodige, Wilhelm; Lodige, Fritz; and Lucke, Josef. Mixing tool for machines for applying glue to shavings. 3,845,940, Cl. 259-107.000.

Loftus, James Peter: *See*—
Gaskell, Philip Hedley; Loftus, James Peter; and Greengrass, Jane, 3,846,101.

Lohmann, Frank; Eckhardt, Claude; and Kleiber, Karl, to Ciba-Geigy AG. Detergents. 3,846,324, Cl. 252-95.000.

Lohmann, Joachim Werner; Peeters, Hugo Karel; Ceulemans, Renaat Andreas; and Moelants, Felix Jan, to Agfa-Gevaert N.V. Recording material containing a polyhalogenated hydrocarbon photoactivator and a dye forming combination of an indolizine derivative and n aldehyde and the use thereof. 3,846,131, Cl. 96-48.00r.

Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., to Marx, Louis, & Co. Inc. Shooting gallery apparatus including impact transmitting projector. 3,845,957, Cl. 273-101.000.

Lombardi, Salvatore. Hoist lock for containerized cargo and the like. 3,845,527, Cl. 24-221.00r.

Long, Alan Gibson: *See*—
Kennedy, James; Long, Alan Gibson; and Underwood, William George Elphinstone, 3,846,416.

Long, Donald V.; Derby, Norwin Cedric; and Chorak, Peter P., to Dalpak Corporation, The. Method of manufacturing a shipping bag. 3,845,696, Cl. 93-35.00r.

Longworth, Michael W., to Ampex Corporation. Tape spool. 3,846,530, Cl. 264-154.000.

Lookatch, Gordon D. Multi-compartment wallet. 3,845,800, Cl. 150-39.000.

Love, Roy E.; and Smith, Rex L., to Corning Glass Works. Optical waveguide connector. 3,846,010, Cl. 350-96.0wg.

Lowe, Warren, to Chevron Research Company. Antioxidant and extreme pressure lubricating oil additive. 3,846,318, Cl. 252-47.500.

Lowrance Electronics, Inc.: *See*—
Barrett, Burton M.; and DeVoe, James A., 3,845,928.

Lowrey, Erlend R.; and Weiss, Vernon E., to Procter & Gamble Company, The. Deep fat frying with EDTA esters to reduce darkening. 3,846,457, Cl. 260-398.500.

Lucas Aerospace Limited: *See*—
Wright, Maurice James; and Cockshott, Charles Peter, 3,846,061.

Lucas, Joseph, (Electrical) Limited: *See*—
Cockin, Robert, 3,845,647.

Lucas, Joseph, Electrical Limited: *See*—
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Lucerne Products, Inc.: *See*—
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Lucke, Josef: *See*—
Lodige, Wilhelm; Lodige, Fritz; and Lucke, Josef, 3,845,940.

Luckett, Gary C.: *See*—
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Ludwig, Frank A.: *See*—
Huff, John C.; Ludwig, Frank A.; and Smith, Arthur G., 3,846,182.

Lueshen, Deldon, to Farmhand, Inc. Continuous loose hay stacking machine. 3,845,608, Cl. 56-13.300.

Luft, Robert G., to International Harvester Company. Dual station throttle and service brake control means. 3,845,629, Cl. 60-719.000.

Lugt, Thomas Vander, Jr.: *See*—
Buttery, Kenneth T.; and Lugt, Thomas Vander, Jr., 3,845,897.

Lumb, Hugo: *See*—
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Lummus Company, The: *See*—
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Lykes, Robert E., to Smith, A. O., Corporation. Unitary lubricating and dust cap assembly. 3,846,652, Cl. 310-90.000.

Maahs, Gunter: *See*—
Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, 3,846,365.

MacArthur, Donald Morley; and Skurkiss, Peter Kenny, to Bell Telephone Laboratories, Incorporated. Technique for selective etching of gold and etchant therefor. 3,846,196, Cl. 156-8.000.

MacDaniel, Gene; and McElvy, Howell T., to Sweetheart Plastics, Inc. Apparatus for making plastic buckets. 3,846,207, Cl. 156-443.000.

Machleder, Warren H.; and Kuhn, Robert, to Rohm and Haas Company. Motor fuel composition. 3,846,089, Cl. 44-58.000.

Mack Trucks, Inc.: *See*—
Eisenberg, Eugene, 3,845,748.
Miller, Robert T.; and Murin, Elias M., 3,845,944.

MacLean, John P.; and Jones, Henry B., to Texaco Inc. Shielded tip access tube for a reactor probe. 3,846,080, Cl. 23-288.00s.

MacMillan Bloedel Research Limited: *See*—
Hume, Alister C., 3,845,856.

Madison, Theodore C.: *See*—
Renna, Nicholas, Jr.; Madison, Theodore C.; and Harvey, Bernard A., 3,846,744.

Maeda, Kenji: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.

Maejima, Masatsugu: *See*—
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Mageli, Orville Leonard: *See*—
D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,846,396.

Mager, Guenther Winand: *See*—
Eichmanns, Winfried Paul; Finken, Hans-Joachim; and Mager, Guenther Winand, 3,845,912.

Magnaflux Corporation: *See*—
Conway, Edward F.; and Conner, Kenneth F., 3,845,658.

Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., to United States of America, Agriculture. N-substituted fatty acid amide lubricants. 3,846,449, Cl. 260-327.00e.

Magnusson, Harry Olof: *See*—
Bondesson, Ulf Goran; Carlson, Lars Anders Fritz; Hedbom, Christina; Magnusson, Harry Olof; and Stjernstrom, Nils Erik, 3,846,445.

Mai, George, Jr. Gun drill and bore grinding fixture. 3,845,589, Cl. 51-219.00r.

Maier, Gerhard, to SABA, Schwarzwalder Apparate-bau-Anstalt August Schwer Sohne G.m.b.H. Adjustable attenuator with P-I-N diodes. 3,846,724, Cl. 333-81.00r.

Maillard, Jacques Georges; and Langlois, Michel, to Laboratories Jacques Loglais. Phenylacetic acid derivatives, a method for their preparation and the applications thereof. 3,846,485, Cl. 260-515.00r.

Main, Henry Allan: *See*—
Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, 3,846,594.

Maistre, Michel Antoine Jules, to Societe Europeene de Propulsion. Three dimensional reinforcing coil structure and method of forming same. 3,846,215, Cl. 161-47.000.

Majewski, Eugene J. Educational game type toy. 3,845,574, Cl. 35-72.000.

Makhova, Nina Nikolaevna: *See*—
Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna, 3,846,490.

Maki, Michiyoshi: *See*—
Higuchi, Hisayuki; and Maki, Michiyoshi, 3,846,167.

Malan, George L. Dam building system. 3,845,631, Cl. 61-30.000.

Malhas, Farouk S. Tennis serve training device. 3,845,953, Cl. 273-29.00a.

Malin, Denis J. Edible mixture. 3,846,564, Cl. 426-212.000.

Mallan, George M.; and Compton, Leslie E., to Occidental Petroleum Corporation. Gasification of carbonaceous solids. 3,846,096, Cl. 48-209.000.

Mallory, P. R., & Co., Inc.: *See*—
Ayers, Clifton E.; and Herreman, Walter G., 3,845,537.
Scott, Charles E., 3,846,648.
Underwood, David W., 3,845,668.

Malloy, Richard Joseph: *See*—
Purol, Michael Dennis; and Malloy, Richard Joseph, 3,846,130.

Malmrose, Gerald E.; and Helgesson, Ulf R., to Acoustifone Corporation. Acoustic distributor. 3,845,838, Cl. 181-129.000.

Malyon, Brian R., to Selector-Micro Company Limited. Servo control systems. 3,846,686, Cl. 318-349.000.

Manabe, Shinichi: *See*—
Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.

Maneely-Illinois Inc.: *See*—
Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., 3,845,540.

Mannesmannrohren-Werke Aktiengesellschaft: *See*—
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Mansmann, Manfred: *See*—
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Marathon Oil Company: *See*—
Merrill, Lavaun S., Jr., 3,846,279.

Marchese, Michael Anthony: *See*—
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Marcus, Israel. Water-soluble tetracyclines. 3,846,486, Cl. 260-519.000.

Markow, Elliott W.: *See*—
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Marks, Alvin M. Method of producing hard transparent sheet-like material or coating. 3,846,161, Cl. 117-93.000.

Marondel, Gunther: *See*—
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Marotta, Ralph, to Monsanto Company. Process of preparing silica xerogels. 3,846,537, Cl. 423-338.000.

Marsh, White: *See*—
Gregory, John G.; Marsh, White; and Trepp, Robert M., 3,846,762.

Martello, Norman F.; and Phillips, David C., to Westinghouse Electric Corporation. Method for continuous coating of polyimide by electrodeposition. 3,846,269, Cl. 204-181.000.

Martin, Charles D.: *See*—
James, Jesse C., 3,845,831.

Martin, Hubert, to Tercell Corporation. Apparatus for float continuous casting of metal. 3,845,811, Cl. 164-281.000.

Martner, John G., to Galloway, Charles E., Gray, Keith W. and Carr, Leatrice J. Ultrasonic transducer. 3,846,779, Cl. 340-258.00b.

Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich. Method and device for measuring parameters of resonant LC circuit elements. 3,846,699, Cl. 324-57.00r.

Maruzen Oil Co., Ltd.: *See*—
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Marx, Louis, & Co. Inc.: *See*—
Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.

Marx, Michael, to Syntex (U.S.A.) Inc. 10,11-Methano 5H-dibenz [b,f]azepines 5-phenacyl derivatives. 3,846,409, Cl. 260-239.00d.

Maschinenbau-Aktiengesellschaft Balcke: *See*—
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Maschinenfabrik Fr. Niepmann & Co.: *See*—
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Maschinenfabrik Niehoff-Kommanditgesellschaft: *See*—
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Mashimo, Yukio: *See*—
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Mason, Daniel W.; and Nester, Henry H.; deceased (by Nester, Dianne L.; administratrix), to Owens-Illinois, Inc. Electroconductive paste composition and structures formed therefrom. 3,846,345, Cl. 252-514.000.

Massa Division, Dynamics Corporation of America: *See*—
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Massachusetts Institute of Technology: *See*—
Curry, Renwick E., 3,846,749.
Smith, Joseph L., Jr.; and Thullen, Philip, 3,845,639.

Masse, Philip R.; Pendy, William J.; and Wentink, William S., to International Business Machines Corporation. Loading and unloading mechanism for flexible magnetic disks. 3,846,836, Cl. 360-98.000.

Massie, Philip E. Sealed pump and drive circuits therefor. 3,846,682, Cl. 318-138.000.

Master Pneumatic-Detroit, Inc.: *See*—
Thrasher, George E., 3,845,840.

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Flogaus, William S.; and Masutani, Mitsumasa, 3,846,007.

Matsuda, Motonobu: *See*—
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Matsui, Takeshi: *See*—
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Matsumoto, Fumio: *See*—
Sakakura, Akira; Matsumoto, Fumio; Ueno, Kiyoshi; Takashima, Junihide; and Kuroki, Katuro, 3,846,187.

Matsumura, Hiroyoshi; and Ono, Seiichi, to Nippon Selfoc Kabushiki Kaisha; a/k/a and Nippon Selfoc Co., Ltd. Method of making an index gradient light-conducting glass structure. 3,846,100, Cl. 65-30.000.

Matsumura, Shoichi; and Hatano, Itaru, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of manufacturing cycloolefines. 3,846,392, Cl. 260-93.100.

Matsuoka, Shigeru; and Mori, Shigeru, to Kabushiki Kaisha Fujikoshi. Positioning controlling apparatus. 3,846,761, Cl. 340-172.500.

Matsushita Electric Co. Ltd.: *See*—
Sakamoto, Yoichi; and Koyanagi, Yukio, 3,846,707.

Matsushita Electric Industrial Co., Ltd.: *See*—
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Matsushita Electric Works, Ltd.: *See*—
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Wada, Yukio; and Okutu, Hideo, 3,846,047.

Matthews, Benjamin H.; and Rhine, Jules W., to Lucerne Products, Inc. Semiconductor assembly. 3,846,823, Cl. 357-74.000.

Matthews, John H.: *See*—
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Matyas, Jakab; Petroczy, Istvan; Somfai, Eva; and David, Agoston, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Vegetable product coated with propionic acid impregnated particulate material. 3,846,567, Cl. 426-289.000.

Mauch, Robert E.; and Sarbacher, Robert I., to Bogue, John C. Deferred action batteries. 3,846,177, Cl. 136-114.000.

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Eckstein, Fritz; and Goody, Roger Sydney, 3,846,402.
Murayama, Akira; Hettler, Hans; and Jastorff, Bernd, 3,846,401.

May, Paul S.: *See*—
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Mayberry, Mickey Lee, to AMP Incorporated. Cable clamp. 3,845,523, Cl. 24-134.00p.

Mayer, Cornelius, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Sabot projectile. 3,845,922, Cl. 244-3.280.

Mayer, Simon Ernest. Polyurethane compositions extended with low aromatic hydrocarbon oils. 3,846,355, Cl. 260-18.0tn.

Mayorcas, Reginald; and Hawkes, David Alec, to British Steel Corporation and Spray Steelmaking Ltd. Treatment of molten metal. 3,846,120, Cl. 75-59.000.

McBride, Lyle E., Jr.: *See*—
Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,846,679.

McCain, David L., to Continental Oil Company. Slurry hopper system. 3,845,990, Cl. 302-15.000.

McCall, George L.: *See*—
Strimple, Robert A.; McCall, George L.; and Walker, Robert L., 3,845,706.

McCanney, Neil R., to Singer Company, The. Modular vehicle trainer sound system having a plurality of separately controllable sound generators and a polyphonic speaker array. 3,845,572, Cl. 35-11.000.

McClendon, Jack C., to Dow Chemical Company, The. Cationic flours and starches. 3,846,405, Cl. 260-233.30r.

McCrae, Robert C.: *See*—
Lira, Emil P.; Barker, Walter M.; and McCrae, Robert C., 3,846,426.

McCue, Bernard Beverly, to RCA Corporation. Method for separating sulfide phosphor particles from mixtures. 3,846,328, Cl. 252-301.60s.

McCulloch Corporation: *See*—
Bailey, Jay Richard, 3,845,557.

McDermott, Hugh L., to Eaton Corporation. Valving arrangement in a hydraulic device. 3,846,051, Cl. 418-61.00b.

McDonnell Douglas Corporation: *See*—
Werkema, Robert G.; and Newcomer, Robert E., 3,846,188.

McDonnell, Neil Patrick Hugh, to Imperial Chemical Industries Limited. Detection of velocities of fluids in conduits. 3,845,660, Cl. 73-194.00e.

McElhinney, Warren W.; and Beaudette, James C., to Chrysler Corporation. Windshield wiper linkage bushing. 3,845,998, Cl. 308-36.100.

McElroy, Arthur H. Combination pipe fusion unit. 3,846,208, Cl. 156-499.000.

McElvy, Howell T.: *See*—
MacDaniel, Gene; and McElvy, Howell T., 3,846,207.

McEvers, William R., Jr.; Cox, Percy T.; and Richter, Albert P., Jr., to Texaco Inc. Gravity force operated apparatuses for generation of longitudinal pulse data from the bottom of a well. 3,845,837, Cl. 181-106.000.

McGraw-Edison Company: *See*—
Cochran, J. Richard, 3,845,642.

McGuire, Stephen E.; Kennedy, Carl D.; and Stauter, John C., to Continental Oil Company. Concentration of oxide copper ores by flotation separation. 3,845,862, Cl. 209-166.000.

McIntosh, Herbert A., to Texaco Inc. Dewaxing of oils. 3,846,277, Cl. 208-31.000.

McKellar, John Forgie: *See*—
Harper, David John; and McKellar, John Forgie, 3,846,395.

McKie, Thomas G.: *See*—
Ely, Donald A.; and McKie, Thomas G., 3,846,228.

McKinney, Daniel F. Simulated log-rolling device with inwardly extending baffle members. 3,845,952, Cl. 272-1.00e.

McLain, Travis R., to Siemon Company, The. Telephonic equipment distribution panel assembly. 3,846,590, Cl. 179-98.000.

McMath, Jack A., to Dover Corporation. Spring biased safety valve. 3,845,785, Cl. 137-517.000.

McNeil Laboratories, Inc.: *See*—
Carson, John Robert, 3,846,447.

McNichol, David H. Resilient devices for temporarily binding and gripping the edge of materials. 3,845,521, Cl. 24-67.900.

McNulty, Thomas Charles, to RCA Corporation. Overcurrent protection circuit including a heat sensitive element and a thyristor. 3,846,674, Cl. 317-13.00c.

McPhee, Charles J., to American Hospital Supply Corporation. Port system for medical humidifier container. 3,846,518, Cl. 261-123.000.

McQuay-Perfex Inc.: *See*—
Beck, Joseph J., 3,846,616.

Meader, Arthur L., Jr.: *See*—
Criddle, Dean W.; and Meader, Arthur L., Jr., 3,846,364.

Mears, Donald B., Jr., to General Instrument Corporation. Coil retainer. 3,846,725, Cl. 336-92.000.

Meauze, Georges D.: *See*—
Carriere, Pierre P.; Leynaert, Jacky R.; Meauze, Georges D.; and Thibert, Jean-Jacques, 3,846,038.

Medichemie A.G.: *See*—
Widauer, Josef Olav; Lang, Konrad; Baum, Laszlo; and Szabo, Suzanne, 3,846,411.

Medizinska Akademia: *See*—
Shindarov, Lubomir Mihaylov; Galabov, Angel Simenov; and Antonov, Dimitar Simov, 3,846,491.

Meguro, Kanji; and Kuwada, Yutaka, to Takeda Chemical Industries, Ltd. Triazolobenzodiazepine derivatives. 3,846,421, Cl. 260-247.20a.

Mejia, Carlos Molini. Organic fertilizer for plants. 3,846,111, Cl. 71-28.000.

Melloy, George F.; Riedel, John Y.; and Oodgursky, Paul P., to Bethlehem Steel Corporation. Wear resistant steel. 3,846,184, Cl. 148-36.000.

Melvin, Samuel L.: *See—*
Fuller, Francis W.; Melvin, Samuel L.; and Merritt, Paul H., 3,845,654.

Mendenhall, Robert L. Apparatus for producing asphalt-aggregate compositions. 3,845,941, Cl. 259-157.000.

Menold, Robert F.: *See—*
Davison, Ellison L.; and Menold, Robert F., 3,845,505.

Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing an N-(1-bicyclic aryl-propyl-2)-N-phenyl-piperazine. 3,846,549, Cl.424-250.000.

Mercer, F. B., Limited: *See—*
Mercer, Frank Brian, 3,845,584.

Mercer, Frank Brian, to Mercer, F. B., Limited. Growing of grasses. 3,845,584, Cl. 47-56.000.

Merck & Co., Inc.: *See—*
Hirschmann, Ralph F.; and Denkewalter, Robert G., 3,846,398.
Hirschmann, Ralph F.; and Denkewalter, Robert G., 3,846,399.
Rosas, Carlos B.; Wantuck, Joseph A.; and Kaufman, Arnold, 3,846,435.
Shen, Tsung-Ying; Walford, Gordon L.; and Witzel, Bruce E., 3,846,553.

Merlin, David G. Film retaining dispenser attachment. 3,845,894, Cl. 225-25.000.

Merrill, Lavaun S., Jr., to Marathon Oil Company. Method for making and slurrying wax beads. 3,846,279, Cl. 208-93.000.

Merriman, Horace B., to Mobil Oil Corporation. Method and apparatus for simultaneously fractionating a plurality of crude oils. 3,846,249, Cl. 196-111.000.

Merritt, Paul H.: *See—*
Fuller, Francis W.; Melvin, Samuel L.; and Merritt, Paul H., 3,845,654.

Mertzweiller, Joseph K., to Exxon Research and Engineering Company. Platinum-magnesium reforming catalyst. 3,846,281, Cl. 208-139.000.

Merz, Werner. Apparatus for developing photographic materials. 3,846,818, Cl. 354-324.000.

Meschershaya, Vera Mikhailovna: *See—*
Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Meschershaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.

Messer. Griesheim GmbH: *See—*
Roeder, Georg, 3,845,942.

Mestetsky, Thomas S.; and Webster, Bruce G., to GAF Corporation. Deinking of waste paper with an aqueous solution containing a N-alkylactam solvent. 3,846,227, Cl. 162-5.000.

Metrailer, Charles E. Telescopic supports for adjustable roof and beam form. 3,845,930, Cl. 249-29.000.

Metzger, Karl Georg: *See—*
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,413.
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,414.
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,415.
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,846,425.

Meunier, Jean-Paul, to CONSERVATOME. Methods, means and compositions for painting object. 3,846,149, Cl. 117-6.000.

Meuresch, Herbert; and Zimmerhackel, Franz, to Precision Valve Corporation. Pressurized aerosol dispenser valve and gasket. 3,845,887, Cl. 222-402.160.

Mevis, Maria E. H. A.: *See—*
Duynstee, Eduard F. J.; and Mevis, Maria E. H. A., 3,846,266.

Meyer, Erwin: *See—*
Forgo, Gabor; Meyer, Erwin; and Moser, Karl, 3,846,150.

Meyer, Martin R., to Mosler Safe Company, The. Access control apparatus. 3,846,622, Cl. 235-61.70b.

Meyers, Robert E., to Bendix Corporation, The. Power brake boost mechanism with pressure regulating device. 3,845,693, Cl. 91-371.000.

Meyerson, Stanley. Bracelet construction. 3,845,618, Cl. 59-80.000.

Michard, Jean: *See—*
Lazzari, Jean-Pierre; and Michard, Jean, 3,846,841.

Michelson, Anatol; and Pace, Clifford, to Gulf & Western Manufacturing Company. Rotary hydraulic press. 3,845,652, Cl. 72-349.000.

Mick, Peter R.: *See—*
Calabro, Salvatore R.; Calabro, John A.; and Mick, Peter R., 3,846,788.

Micro Communications Corporation: *See—*
Johnson, Clark E., Jr.; and Richman, Peter L., 3,846,831.

Midland-Ross Corporation: *See—*
Jwuc, Karl J., 3,845,867.

Midorikawa, Yoshinori; and Sasanami, Tsuneo, to Dainippon Ink and Chemicals, Inc. and Japan Gasoline Co., Ltd. Cultivation process for micro-organisms. 3,846,246, Cl. 195-109.000.

Mies, Carl P., to Mies Filter Products, Incorporated. Apparatus for cooking chicken. 3,845,702, Cl. 99-408.000.

Mies Filter Products, Incorporated: *See—*
Mies, Carl P., 3,845,702.

Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, to Teijin Limited and Dai Nihon Jochugiku Co., Ltd. Insecticidal and acaricidal composition and process for controlling pests. 3,846,551, Cl. 424-180.000.

Mihlhauser, Nicholas W. Electrical combination key lock. 3,846,640, Cl. 307-10.0at.

Mijnheer, Andries: *See—*
Van Mal, Harmannus Hinderikus; Mijnheer, Andries; Rauwerdink, Hendrik Jan; and De Wit, Johannes Adrianus, 3,845,636.

Miklovic, John. Whirlpool bath. 3,845,759, Cl. 128-66.000.

Militz, Uwe: *See—*
Wefers, Norbert; Militz, Uwe; Unglaube, Uwe; and De Meer, Jan, 3,846,623.

Milkovich, Ralph; and Chiang, Mutong T., to CPC International Inc. Epoxy and glycol terminated macromolecular monomers having a substantially uniform molecular weight distribution. 3,846,393, Cl. 260-93.50a.

Miller, Robert T.; and Murin, Elias M., to Mack Trucks, Inc. Adjustable expanding die. 3,845,944, Cl. 269-48.100.

Mincuzzi, Antonio, to Societe Internationale de Mecanique Industrielle, S.A. Pump impellers for cooling systems of I.C.E. 3,846,045, Cl. 416-230.000.

Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, to Sumitomo Chemical Company, Limited. 1,5-Disubstituted-3-substituted phenyl hydantoins. 3,846,441, Cl. 260-309.500.

Mine, Junichi: *See—*
Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.

Mine Safety Appliances Company: *See—*
Davison, Ellison L.; and Menold, Robert F., 3,845,505.
Strange, John P., 3,846,321.

Minnesota Mining & Manufacturing Company: *See—*
Shaffer, Edward C., 3,846,635.
Weyer, James H., 3,845,757.

Minnesota Mining and Manufacturing Company: *See—*
Franer, Victor R., 3,846,843.
Wear, Robert L., 3,846,375.

Minolta Camera Kabushiki Kaisha: *See—*
Yata, Kotaro; and Matsuda, Motonobu, 3,846,806.
Yata, Koutaro; and Sahara, Masayoshi, 3,846,814.

Mishra, Anil K., to Westinghouse Electric Corporation. Dynamoelectric machine ventilating system. 3,846,651, Cl. 310-61.000.

Mita, Tooru: *See—*
Kobayashi, Takashi; Aida, Masaaki; Mita, Tooru; and Nishi, Takayuki, 3,845,536.

Mitacek, Bill: *See—*
Mitacek, John, 3,846,394.

Mitacek, John; deceased (by Mitacek, Bill; administrator), to Phillips Petroleum Company. Introducing catalyst into a reactor. 3,846,394, Cl. 260-93.700.

Mitchell, Lawrence C., to Ethyl Corporation. Smoke retardant vinyl chloride polymer compositions. 3,846,372, Cl. 260-45.75r.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Nakajima, Yozo; and Ohiani, Shohei, 3,846,185.
Okamoto, Haruki; Sato, Masaki; and Kusaka, Shunichi, 3,846,838.
Ueda, Atsushi; and Ishii, Mitsuaki, 3,846,639.

Mitsubishi Paper Mills, Ltd.: *See—*
Futaki, Kiyoshi; Kohmura, Isao; and Haino, Kozo, 3,846,153.

Mitsubishi Petrochemical Company Limited: *See—*
Yamaguchi, Yasuju; and Nakayama, Yujiro, 3,846,265.

Mittell, Peter. Spectacle case. 3,845,799, Cl. 150-29.000.

Miyamoto, Masao: *See—*
Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,846,467.

Miyanohara, Isao: *See—*
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,846,488.

Miyazaki, Gentaro: *See—*
Hirota, Ryoichi; Fujishima, Tooru; Miyazaki, Gentaro; Iwasaki, Tadahiko; Akatsu, Mitsuharu; and Kinoshita, Tomoo, 3,846,673.
Suzuki, Nobuyuki; and Miyazaki, Gentaro, 3,846,666.

Miyazaki, Kenichi: *See—*
Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, 3,846,579.

Miyoshi, Tadayoshi: *See—*
Takanashi, Itsuo; Miyoshi, Tadayoshi; Uesaka, Koji; Miyazaki, Kenichi; and Yokokawa, Sumio, 3,846,579.

Mizutani, Nagao: *See—*
Okawara, Yasuo; Shimazaki, Toshikazu; and Mizutani, Nagao, 3,846,581.

Mlavsky, Abraham I.: *See—*
Labelle, Harold E., Jr.; Mlavsky, Abraham I.; and Cronan, Charles J., 3,846,082.

Moberly, Charles W.: *See—*
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Mobil Oil Corporation: *See—*
Dallas, Charles G., 3,845,562.
Dondis, Edward F.; and Payne, John W., 3,846,245.
Merriman, Horace B., 3,846,249.
Owen, Hartley; and Demmel, Edward J., 3,846,280.

Mocarski, Zenon R., to S.R.C. Laboratories, Inc. Variable flow two stage nozzle. 3,845,904, Cl. 239-410.000.

Mocotte, Jacques; Disdier, Andre; and Prost, Francoise, to PROGIL. Alkenoxy substituted ureas. 3,846,465, Cl. 260-453.00r.

Mod, Robert R.: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,846,449.

Mod, William A.; and Caldwell, Donald L., to Dow Chemical Company, The. Source composition for alkali metal oxides and aluminum oxide. 3,846,143, Cl. 106-52.000.

Moeglich, Karl, to Hughes, D. A., Affiliates, Inc. Anodizing of metals. 3,846,261, Cl. 204-56.00r.

Moelants, Felix Jan: *See—*
Lohmann, Joachim Werner; Peeters, Hugo Karel; Ceulemans, Renaat Andreas; and Moelants, Felix Jan, 3,846,131.

Moffett, Robert B., to Upjohn Company, The. 1H-imidazo[1,2-a][1,4]benzo-diazepine-1,2(3H)-diones. 3,846,443, Cl. 260-309.700.

Mohr, Theodore Warren, to Bell Telephone Laboratories, Incorporated. Compact microwave termination and uses thereof. 3,846,720, Cl. 333-22.00r.

Moi, Manfred Edvin, to Norstron Electro-Optic Systems Ltd. Liquid crystal display device. 3,846,015, Cl. 350-160.01c.

Mok, Young I., to Du Pont de Nemours, E. I., and Company. Process for hydrocyanation of olefinic compounds. 3,846,474, Cl. 260-465.80r.

Moleculon Research Corporation: *See—*
Nichols, Larry D., 3,846,404.

Molin, Vallard B. Floating work driver chuck. 3,845,962, Cl. 279-1.00j.

Moll, Franz: *See—*
Hellmig, Erhard; Moll, Franz; Randolph, August; and Saleck, Wilhelm, 3,846,135.

Molnlycke, AB: *See—*
Zoller, Henry, 3,845,766.

Momiyama, Zenjiro: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.

Monark-Crescent AB: *See—*
Blomberg, Folke Ivar; and Engerstam, Marten, 3,845,663.

Monbaliu, Marcel Jacob; and Van Poucke, Raphael Karel, to Gevaert-Agfa N.V. Method for the preparation of 3-acylamino-2-pyrazolin-5-ones. 3,846,444, Cl. 260-310.00a.

Monolithic Systems Corporation: *See—*
De Vries, Hubert Gale, 3,846,765.

Monsanto Company: *See—*
Deltente, Jacques J.; O'Connor, Richard J.; and Kuo, Mau-Jung, 3,846,239.
Fallwell, William F., Jr., 3,846,354.
Fields, Joseph E.; and Johnson, John H., 3,846,543.
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Reilly, Joseph R., 3,846,531.

Montagna, Angelo A.: *See—*
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,846,285.
Chun, Sun W.; and Montagna, Angelo A., 3,846,288.

Montgomery, Eldwin C.; Shamp, Donald E.; and Swillinger, Francis L., to Libbey-Owens-Ford Company. Float glass bath fender supports. 3,846,109, Cl. 65-182.00r.

Montillier, Jean-Pierre, to Pitney-Bowes, Inc. Method for synthesizing dicarbazolyl cyclobutane. 3,846,264, Cl. 204-158.00r.

Mooi, John: *See—*
Erickson, Henry; Hindin, Saul G.; Keith, Carl D.; and Mooi, John, 3,846,343.

Moore, Calvin K. Root cutter. 3,845,796, Cl. 144-1.00r.

Moore, George L., to Airco, Inc. 2-Methoxy-3-h-perfluorobutane. 3,846,502, Cl. 260-614.00f.

Moore, John W., to Swan Corporation. Biased wall panel for use with a three-sided alcove. 3,845,600, Cl. 52-222.000.

Moorfeed Corporation: *See—*
Doty, Myron L., 3,845,857.

Moran, Stephen F.: *See—*
Rosenberg, Edgar N.; and Moran, Stephen F., 3,845,634.

Morgan, Paul A., to Century Wheels, Inc. Micrometer with movable anvil. 3,845,564, Cl. 33-164.00r.

Mori, Shigeru: *See—*
Matsuoka, Shigeru; and Mori, Shigeru, 3,846,761.

Mori, Takaaki: *See—*
Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, 3,846,166.

Morin, Daniel Louis: *See—*
Leclercq, Marius; Morin, Daniel Louis; Damien, Michael Henri; and Andreani, Monique Andree, 3,846,224.

Morisaki, Masuo: *See—*
Ikekawa, Nobuo; and Morisaki, Masuo, 3,846,455.

Morival, Genevieve, to Societe Anonyme dite: Aquitaine Total Organico Tour Aquitaine. Process for the polymerization of lactames allowing substances affected by high temperatures to be added during polymerization. 3,846,357, Cl. 260-18.00n.

Morozov, Andrei Elizarovich: *See—*
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,846,699.

Morrell, Ronald Joseph; Thompson, Joseph; Hemming, Raymond Charles; and Main, Henry Allan, to Northern Electric Company Limited. Coin telephone with separate cosmetically attractive cover. 3,846,594, Cl. 179-179.000.

Morrison, Steven: *See—*
Brown, James H.; Buchanan, James E.; and Morrison, Steven, 3,846,786.

Morrissette, Camille: *See—*
Begin, Marcel; Morrissette, Camille; Beaumier, Pierre; and Tupinier, Charles, 3,846,211.

Moser, Karl: *See—*
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Moser, Robert E.: *See—*
Hempenius, Walter L.; Valenti, Joseph; and Moser, Robert E., 3,846,560.

Moshnin, Evgeny Nikolaevich: *See—*
Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich, 3,845,650.

Mosler Safe Company, The: *See—*
Meyer, Martin R., 3,846,622.

Mossberg, O. F., & Sons, Inc.: *See—*
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Motorola, Inc.: *See—*
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Daniels, R. Gary; and Foltz, James Walter, 3,846,687.
Flowers, Dervin L., 3,846,181.

Motycka, Charles J.: *See—*
Doerfling, Ralph G.; and Motycka, Charles J., 3,846,200.

Mourlevat, Jean, to Entreprise de Recherches et d'Activites Petrolieres (ELF). Cable tool for setting liners. 3,845,819, Cl. 166-239.000.

Mozdzanowski, Joachim, to Delmag Maschinenfabrik, Rheinhold Dornfeld. Vibratory compaction vehicle. 3,846,037, Cl. 404-117.000.

Mrotek, Edward Norman: *See—*
Towle, Warren Ladd; Mrotek, Edward Norman; and Wiethaup, Robert Roland, 3,846,180.

Mucsi, Michael. Safety, electrical grounding outlet with safety switch. 3,846,598, Cl. 200-51.090.

Mueller, Hanspeter: *See—*
Vetter, Walter; Mueller, Hanspeter; and Geissmann, Theodor, 3,846,570.

Mueller, James A.: *See—*
Jeris, John S.; Beer, Carl; and Mueller, James A., 3,846,289.

Mueller, Robert E. Direct television drawing and image manipulating system. 3,846,826, Cl. 358-81.000.

Mukai, Kunio: *See—*
Hirano, Masachika; Mukai, Kunio; Takeda, Hisami; and Tanaka, Katsutoshi, 3,846,552.

Mulla, Mir S.; and Hwang, Yih-Shen, to University of California, The Regents of the. Bait for synanthropic flies and method for making same. 3,846,557, Cl. 426-1.000.

Mullejans, Heinrich: *See—*
Asselborn, Peter; Cramer, Werner; and Mullejans, Heinrich, 3,846,610.

Multifastener Corporation: *See—*
Ladouceur, Harold A.; and Matthews, John H., 3,845,860.

Murakami, Heiichiro: *See—*
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.

Murayama, Akira; Hettler, Hans; and Jastorff, Bernd, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V. 3'-O, 5'-N-cyclophosphate nucleosides. 3,846,401, Cl. 260-211.504.

Murin, Elias M.: *See—*
Miller, Robert T.; and Murin, Elias M., 3,845,944.

Murono, Yositaka: *See—*
Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, 3,846,802.

Murrmann, Helmuth, to Siemens Aktiengesellschaft. Method of producing schottky diodes. 3,846,192, Cl. 148-175.000.

Muz, Edwin, to Nicolay GmbH. Insulated electrical conductor for panel mounting. 3,846,736, Cl. 339-126.0rs.

Myers, Clayborne E.; and Vreeland, Arthur E., to International Telephone and Telegraph Corporation. Time division multiplexer employing digital gates and a digital-to-analog converter. 3,846,787, Cl. 340-347.0ad.

Myers, Glenn R. Nonstop refuse collection system. 3,845,868, Cl. 214-42.00r.

Nadeau, James H. Door dolly. 3,845,969, Cl. 280-47.130.

Nadobnikov, Mikhail Nikolaevich: *See—*
Rabodzei, Nikolai Vasilievich; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich, 3,846,632.

Nagai, Yoichiro; Ojima, Iwao; and Kogure, Tetsuo, to Sagami Chemical Research Center. Process for producing alkoxysilane. 3,846,463, Cl. 260-448.80r.

Nagaoka, Shinji: *See—*
Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,846,815.

Nagata, Minoru; and Sato, Kozi, to Hitachi, Ltd. Lateral transistor having emitter region with portions of different impurity concentration. 3,846,821, Cl. 357-35.000.

Nagoya Metal Co., Ltd.: *See—*
Nakahara, Yositaka, 3,845,895.

Nakahara, Yositaka, to Nagoya Metal Co., Ltd. Apparatus for cracking castings. 3,845,895, Cl. 225-93.500.

Nakajima, Keiji: *See—*
Horiguchi, Shojiro; Nakamura, Michiei; Nakajima, Keiji; and Takizawa, Minoru, 3,846,452.

Nakajima, Yozo; and Ohiani, Shohei, to Mitsubishi Denki Kabushiki Kaisha. Method of producing semi-hard magnetic Ni-Cu-Fe alloys and the resulting product. 3,846,185, Cl. 148-120.000.

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Nakamura, Michiei: *See*—
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Nakamura, Michiya: *See*—
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Nakamura, Yukio: *See*—
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Nakano, Yasuaki; Nakata, Kazuo; and Uchikura, Yuriko, to Hitachi, Ltd. Character recognition apparatus. 3,846,752, Cl. 340-146.30q.

Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, to Takeda Chemical Industries, Ltd. Preparation of a ductless powdery protease-containing composition. 3,846,240, Cl. 195-68.000.

Nakaoji, Kunio: *See*—
Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira, 3,846,386.

Nakashima, Akio: *See*—
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Nakata, Kazuo: *See*—
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Nakayama, Yuya: *See*—
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Nalco Chemical Company: *See*—
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Nara, Kiyoshi: *See*—
Nakao, Yoshio; Nara, Kiyoshi; Katamoto, Kazuyoshi; Ito, Kikuo; and Ikeda, Sakashi, 3,846,240.

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National Distillers and Chemical Corporation: *See*—
Baum, Henry T.; and Stiles, Claude J., 3,846,073.

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Honrath, Kurt; and Naumann, Wilhelm, 3,845,667.

Naymik, Michael M. Lightweight snowplow for quick attachment to small vehicle. 3,845,577, Cl. 37-42.0vl.

Needham, Donald G., to Phillips Petroleum Company. Base for universal pigment concentrates. 3,846,360, Cl. 260-23.70r.

Needham, Robert F.; and Souchek, Dwaine G., to ACF Industries, Incorporated. Pressure tank safety vent system. 3,845,876, Cl. 220-203.000.

Nemtsov, Mark Semenovich: *See*—
Kachlova, Revekka Vulfovna; Nemtsov, Mark Semenovich; Balkhanova, Galina Fedorovna; Bychkovskaya, Ljudmila Nikolaevna; Mescherskaya, Vera Mikhailovna; and Rabinovich, Sofya Petrovna, 3,846,338.

Nepovim, Zdenek, to Lindsay Specialty Products Limited. Cable connector. 3,846,738, Cl. 339-177.00r.

Nesbitt, John D.: *See*—
Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., 3,846,565.

Nester, Dianne L.: *See*—
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Nester, Henry H.: *See*—
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Nevitt, Thomas D.: *See*—
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Newmont Exploration Limited: *See*—
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Newswanger, Paul S. Angle measuring device. 3,845,565, Cl. 33-174.00r.

Nicholls, Lawrence George; and Gee, David William, to Girling Limited. Flow control valve for hydraulic damper and the like. 3,845,782, Cl. 137-493.000.

Nichols, Donald, to United States of America, Army. Synchronized image intensifier gating. 3,846,642, Cl. 307-239.000.

Nichols, Larry D., to Moleculon Research Corporation. Process of preparing gelled cellulose triacetate products and the products produced thereby. 3,846,404, Cl. 260-230.000.

Nicolay GmbH: *See*—
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Nidola, Antonio: *See*—
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Niepmann, Otto, to Maschinenfabrik Fr. Niepmann & Co. Method of making an envelope for a cigarette block. 3,845,697, Cl. 93-35.0sb.

Nilles, John D.: *See*—
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Ninagawa, Sadayoshi: *See*—
Okumura, Shinji; Takeshita, Shito; Enei, Hitoshi; and Ninagawa, Sadayoshi, 3,846,573.

Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 3-Substituted-7-hydroxy lower alkyl benzodiazepines. 3,846,410, Cl. 260-239.30d.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
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Nippon Kogaku Kabushiki Kaisha: *See*—
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Nippon Kokan Kabushiki Kaisha: *See*—
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Nippon Selfoc Co., Ltd.: *See*—
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Nippon Selfoc Kabushiki Kaisha; a/k/a: *See*—
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Nishi, Takayuki: *See*—
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Nitz, Rolf-Eberhard: *See*—
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NL Industries, Inc.: *See*—
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Nojima, Isao; Tamaru, Keikichi; and Sato, Tai, to Tokyo Shibaura Electric Co., Ltd. Associative memories including MOS transistors. 3,846,766, Cl. 340-173.0am.

Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., to United States of America, Agriculture. Reducing oil content of fried potatoes by immersing in oil-free difluorodichloro-methane. 3,846,572, Cl. 426-429.000.

Norddeutsche Affinerie: *See*—
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Nordsiek, Karl-Heinz: *See*—
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Nordyke, John S.; and Spangenberg, William C., to Hammond Lead Products, Inc. Novel composite pigments. 3,846,148, Cl. 106-308.00b.

Norell, John R., to Phillips Petroleum Company. Amide production. 3,846,492, Cl. 260-558.00r.

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Norprint Limited: *See*—
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Norstron Electro-Optic Systems Ltd.: *See*—
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North American Van Lines, Inc.: *See*—
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Nurminen, Matti Pekka; and Hammar, Paavo Henrikki. Method of producing a light room element. 3,845,544, Cl. 29-458.000.
N.V. Industriele Handelscombinatie Holland: *See*—
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Obrecht, Robert Paul, to Stauffer Chemical Company. Distillation of chlorinated hydrocarbons with alkali metal material addition. 3,846,253, Cl. 203-7.000.
O'Brien, Billy L.; and O'Brien, Heber P. Apparatus for connecting underwater pipelines. 3,845,972, Cl. 285-24.000.
O'Brien, Darrell E.: *See*—
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O'Brien, Heber P.: *See*—
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Office National d'Etudes et de Recherchs Aerospatiales (par abreviation: O.N.E.R.A.): *See*—
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Ohashi, Takashi; and Sakata, Ryozo, to Bridgestone Tire Company Limited. Copolymer of a conjugated diolefin and vinyl chloride and manufacturing process therefor. 3,846,388, Cl. 260-82.100.
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Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, to Nippon Soken, Inc. Operating method and system for predicting collision. 3,846,796, Cl. 343-7.500.
Ojima, Iwao: *See*—
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Oka, Mitsunori; and Yasuda, Michio, to Hitachi, Ltd. Pattern preprocessing apparatus. 3,846,754, Cl. 340-146.30h.
Okada, Takashi: *See*—
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Okamoto, Haruki; Sato, Masaki; and Kusaka, Shunichi, to Mitsubishi Denki Kabushiki Kaisha. Selection device. 3,846,838, Cl. 360-106.000.
Okawara, Yasuo; Shimazaki, Toshikazu; and Mizutani, Nagao, to Citizen Tokei Company Limited. Printing apparatus used for electronic computers. 3,846,581, Cl. 178-33.00r.
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Okumura, Shinji; Takeshita, Shito; Enei, Hitoshi; and Ninagawa, Sadayoshi, to Ajinomoto Co., Inc. Method of stabilizing organic compounds against oxidation with isoquinoline derivatives. 3,846,573, Cl. 426-182.000.
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Olevsky, Viktor Markovich: *See*—
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O'Neal, Cothburn M., to Riverside Press, Inc., mesne. Voting machine with punch card attachment. 3,846,718, Cl. 234-1.000.
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Ono, Seiichi: *See*—
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Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, to Imperial Chemical Industries, Limited. Control of liquid dissemination. 3,846,090, Cl. 44-62.000.
Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, to Imperial Chemical Industries Limited. Polymer solution. 3,846,091, Cl. 44-62.000.
Ostapchenko, Evgeny Petrovich: *See*—
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Osterholtz, Fred D., to Union Carbide Corporation. Low energy electron beam treatment of polymeric films and apparatus therefore. 3,846,521, Cl. 264-22.000.
Otis Engineering Company: *See*—
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Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, to Rohm & Haas Company. Accelerating separation rate of two liquid phases in the extraction of aqueous acrylic acid. 3,846,488, Cl. 203-15.000.
Otte, Hubert Josef; and Roosman, Gosta, to Selco Mining Corporation Limited. Bore hole logging device. 3,845,569, Cl. 33-312.000.
Outboard Marine Corporation: *See*—
Donohue, James A.; Winston, John H.; and Ward, Harry M., III, 3,845,747.
Over, William Roderick, to AMP Incorporated. Apparatus for connecting conductors to contact terminals in an electrical connector. 3,845,535, Cl. 29-203.0mw.
Owen, Hartley; and Demmel, Edward J., to Mobil Oil Corporation. Method of improving a dense fluid bed catalyst regenerator used in conjunction with a riser hydrocarbon conversion operation on hi-sulfur feeds. 3,846,280, Cl. 208-120.000.
Owens-Corning Fiberglas Corporation: *See*—
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Pallos, Ferenc Marcus, to Stauffer Chemical Company. Esters of di-(thiocarbamoyl) ethylene as juvenile hormone mimicking agents for control of insects. 3,846,466, Cl. 260-455.00a.

Palmer, Ansell W.: *See—*
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Palumbo, Salvatore. Disassemblable hatchet. 3,845,798, Cl. 145-2.00r.

Pappas, Peter G.; Edmisten, Walter C.; and Von Levern, Hobe Schroeder, to Standard Oil Company. Crude oils and fuel oils of improved pour point depressant and flowability properties. 3,846,092, Cl. 44-62.000.

Papst, Josef; deceased (by Papst, Stephanie; and Brockmuller, Brigitte, nee Papst; sole beneficiaries), to Hoerbiger Ventilwerke Aktiengesellschaft. Disc or plate valve for piston-type compressors. 3,845,786, Cl. 137-535.000.

Papst, Stephanie: *See—*
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Parsons, Joseph R.; and Rechter, Harold L., to Chicago Fire Brick Company. Gunable refractory composition. 3,846,144, Cl. 106-56.000.

Patena, Jaime. System for modular construction. 3,845,592, Cl. 52-93.000.

Patterson, Lawrence. Ultraviolet Lamp fixture. 3,846,072, Cl. 21-74.00r.

Pauza, William Vito; and Poltonavage, Edward Michael, to AMP Incorporated. Frames for adapting a multi-contact electrical connector to electrically connect with various styles of substrates. 3,846,734, Cl. 339-17.0cf.

Payne, Alan James: *See—*
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Pearson, Melton T., to Standard Spray and Chemical Company. Method for treating a peanut crop. 3,846,116, Cl. 71-65.000.

Peberdy, William T., to Chubb Fire Security Limited. Fire detector responsive to amplitude modulation of a pulsed EM beam. 3,846,772, Cl. 340-227.00r.

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Peeters, Hugo Karel: *See—*
Lohmann, Joachim Werner; Peeters, Hugo Karel; Ceulemans, Renaat Andreas; and Moelants, Felix Jan, 3,846,131.

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Pelloux-Gervais, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes George Claude. Coupling device for transfer conduit for a cryogenic liquid. 3,845,974, Cl. 285-47.000.

Pelton, John Franklin, to Union Carbide Corporation. Chromium-chromium carbide powder and article made therefrom. 3,846,084, Cl. 29-191.200.

Pendy, William J.: *See—*
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Pennwalt Corporation: *See—*
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Pentrol Industries, Inc.: *See—*
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Peppard, William D., to Rexnord, Inc. Chain-driven incline. 3,845,722, Cl. 104-165.000.

Perkins, Warren Edwin; and Marchese, Michael Anthony, to Union Carbide Corporation. Phase-separating spray header. 3,845,635, Cl. 62-51.000.

Perkow, Werner, to Norddeutsche Affinerie and Spiess, C. F., & Sohn. Method for killing moss. 3,846,114, Cl. 71-97.000.

Perloff, Ronald S., to Electron Inc. Machine work sensor. 3,846,688, Cl. 318-490.000.

Permatank Engineering & Mfg. Co., Inc.: *See—*
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Perrotti, Emilio; and Cipriant, Gioacchino, to Snam Progetti S.p.A. Process for the preparation of esters of carbonic acid. 3,846,468, Cl. 260-463.000.

Perry, Joseph A., Jr. Pressure transducer. 3,845,664, Cl. 73-406.000.

Peter, Richard: *See—*
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Peternel, Jacob R.: *See—*
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Peterson, Raymond E. Casket locking mechanism. 3,845,976, Cl. 292-158.000.

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Petit, Earl W. Electric power plant for land vehicles. 3,845,835, Cl. 180-65.00r.

Petrella, Joseph R.; Shaw, John N.; and Peternel, Jacob R., to PPG Industries, Inc. Method of controlling the shape of thermoplastic press bent sheets. 3,846,105, Cl. 65-106.000.

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Petrucci, Raymond M.; and Schnick, Arthur W., to AMF Incorporated. Filter housing with removable diaphragm and a seal means therefor. 3,846,307, Cl. 210-323.000.

Pettit, Paul H., Jr., to Du Pont de Nemours, E. I., and Company. Thermosetting acrylic powder coating composition of a polyblend of acrylic polymer having a high glass transition temperature and an acrylic polymer having a low glass transition temperature nd a cross-linking agent. 3,846,368, Cl. 260-39.00r.

Pews, R. Garth: *See—*
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Pickles, Joseph, to Ferro Manufacturing Corporation. Safety seat track construction. 3,845,982, Cl. 296-65.00a.

Pierce, Donald Cameron. Device for cutting ovals in mats or glass sheets. 3,845,676, Cl. 82-1.300.

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Pinzone, Joseph A.; Troje, Gerald J.; and Schiavone, Edward L. Reflectors and mounts for panoramic optical systems. 3,846,809, Cl. 354-95.000.

Pirchl, Gerhard, to Romay AG. Visual display apparatus with character matrix. 3,846,605, Cl. 200-316.000.

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Price, Richard W., to Emhart Corporation. Adjustable chuck for containers or vials. 3,845,963, Cl. 279-89.000.

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Quinlan, William J.; and Huver, Lawrence L. Windshield wiper assembly. 3,845,519, Cl. 15-250.320.

Quinn, Ronald E., to General Motors Corporation. External recirculation burner. 3,846,062, Cl. 431-116.000.

Raabe, Francis O.; and Yossa, Frank A., to Armco Steel Corporation. Method and apparatus for the high temperature annealing of metallic coils. 3,846,190, Cl. 148-155.000.

Raabe, Thomas; Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katharine; heiress); Scholtholt, Josef; and Nitz, Rolf-Eberhard, to Cassella Farbwerke mainkur Aktiengesellschaft. Derivatives of 3-benzoyl-2-(-hydroxyphenethylamino)-propionitrile. 3,846470, Cl. 260-465.00e.

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Racunas, Bernard J.; and Jarrett, Noel, to Aluminum Company of America. Aluminum recovery from scrap materials. 3,846,123, Cl. 75-68.00r.

Ragan, Brad, Inc.: *See—*
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Ram, Michael J.; and Riggs, John P., to Celanese Corporation. Acrylic filaments which are particularly suited for thermal conversion to carbon filaments. 3,846,833, Cl. 260-88.70r.

Rameson, William W., to TRW Inc. Differential gaging instrument. 3,845,566, Cl. 33-174.00l.

Ramsey, James E., Jr.: *See—*
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Randazzo, Anthony J., to Amstar Corporation. Method and apparatus for making a bag with a sealed pouring spout. 3,845,695, Cl. 93-1.0ts.

Randolph, August: *See—*
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Ranieri, Louis F. Self-contained multi-blade package and method of making same. 3,845,541, Cl. 29-432.000.

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Reinertsen, Tormod K., to Ideal Toy Corporation. Letters and numbers game. 3,845,958, Cl. 273-135.00d.
Reinis, Gedeminas J., to Xerox Corporation. Imaging system. 3,846,127, Cl. 96-1.00m.
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Renault, Philippe; Dezael, Claude; and Deschamps, Andre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for regenerating strong bases from solutions of their sulfides and simultaneously producing sulfur. 3,846,538, Cl. 423-183.000.
Renault, Philippe; Dezael, Claude; and Deschamps, Andre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Purification of gas containing sulfur dioxide or sulfur trioxide with the production of elemental sulfur. 3,846,539, Cl. 423-574.000.
Renna, Nicholas, Jr.; Madison, Theodore C.; and Harvey, Bernard A., to United States of America, Navy. Shock hardened transducer. 3,846,744, Cl. 340-10.000.
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Rodermund, Gerd; and Kappus, Helmut (said Kappus assor. to said), 3,846,212.

Rodermund, Gerd; and Kappus, Helmut, said Kappus assor. to said Rodermund, Gerd. Method and machine for the manufacture of wreaths, pompons, rosettes and the like. 3,846,212, Cl. 161-15.000.

Roe, Kenneth W.; Studwell, Ernest E.; and Cooke, Robert E., to Nash Engineering Company. Liquid ring pump lobe purge. 3,846,046, Cl. 417-54.000.

Roedel, George F., to General Electric Company. Process for producing silicone resins. 3,846,358, Cl. 260-18.00s.

Roeder, Georg, to Messer. Griesheim GmbH. Torch cutting machine. 3,845,942, Cl. 266-23.00k.

Rogers, Herbert E., Jr.: *See—*
Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., 3,846,126.

Rogers, Maxmillina P.: *See—*
Lohr, Raymond J.; Condry, Martin; Hirsch, Mahlon E.; Carver, Richard N.; and Rogers, Maxmillina P., 3,845,957.

Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., to Dexion-Comino International Limited. Transporter systems. 3,845,718, Cl. 104-130.000.

Rohm & Haas Company: *See—*
Greenfield, Stanley A., 3,846,448.
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,846,488.

Rohm and Haas Company: *See—*
Machleder, Warren H.; and Kuhn, Robert, 3,846,089.

Rohrer, Carl H. Sub-surface gas main replacement method. 3,845,789, Cl. 138-97.000.

Rollform Incorporated: *See—*
Adams, George C., 3,846,031.

Rolls-Royce (1971) Limited: *See—*
Higginbotham, Gordon John Spencer; and Cuckson, Kenneth, 3,845,808.

Romander, Curtis M.: *See—*
Busma, John H., Jr.; and Romander, Curtis M., 3,846,206.

Romandi, Denes, to Siemens Aktiengesellschaft. High voltage generator for X-ray diagnosis apparatus. 3,846,633, Cl. 250-402.000.

Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich. Machine for manufacturing a coil of a pipe by bending it. 3,845,650, Cl. 72-310.000.

Romay AG: *See—*
Pirchl, Gerhard, 3,846,605.

Romberg, Felix B. Traction gate with camming bar. 3,845,804, Cl. 160-328.000.

Roos, Paul W., to BTV Engineering Corporation. Furnace heating element. 3,846,621, Cl. 219-550.000.

Roos, Willem Cornelis. Sterling process engines. 3,845,624, Cl. 60-517.000.

Roosman, Gosta: *See—*
Otte, Hubert Josef; and Roosman, Gosta, 3,845,569.

Rordorf, Horst Edmund. Method of heating objects and device for the performance of the method. 3,846,574, Cl. 13-31.000.

Rosas, Carlos B.; Wantuck, Joseph A.; and Kaufman, Arnold, to Merck & Co., Inc. Process for the production of 2-methyl-5-methyl pyridine. 3,846,435, Cl. 260-290.00p.

Rose, J. Sterling, to Birko Chemical Corporation. Method and apparatus for taking and transferring bacteria samples. 3,846,248, Cl. 195-127.000.

Rosenberg, Edgar N.; and Moran, Stephen F., to United States of America, Navy. Dual hydro winch lift mechanism. 3,845,634, Cl. 61-46.500.

Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., to South Bend Range Corporation. Method of heating frozen food using sonic or ultrasonic wave energy. 3,846,565, Cl. 426-238.000.

Rosenzweig, Julius; and Altenhaus, Rhoda. Ornamental plaque. 3,846,214, Cl. 161-19.000.

Ross, George, to Clow Corporation. Stabilization system for a floating water aerator. 3,846,517, Cl. 261-91.000.

Ross, William A.; Schmaling, Roderick N.; and Olson, Warren E., to Pitney-Bowes, Inc. Automatic etcher for offset master. 3,845,713, Cl. 101-148.000.

Rossi, Armando. Process and apparatus for extending the range of a digital to analog converter to be used with a strip recorder. 3,846,785, Cl. 340-347.0da.

Rossi, Joseph R.; Griffiths, Frederick J.; and Griffin, James L., to Maneely-Illinois Inc. Hot galvanizing process and apparatus. 3,845,540, Cl. 29-430.000.

Rostaing, Paul, to Rhone-Poulenc S.A. Storage stable binders. 3,846,359, Cl. 260-22.00s.

Rostron, Robert Walther; and Varadi, Peter Ferenc, to Communications Satellite Corporation. Process for solder coating silicon solar cells. 3,846,258, Cl. 204-15.000.

Roteman, Jerome; and Gogola, Joseph K., to Addressograph-Multigraph Corporation. Fixing device. 3,846,151, Cl. 117-21.000.

Roth, Adrian W.; and Amsler, Joachim, to Sprecher & Schuh AG. Method of producing a vacuum switch contact. 3,845,543, Cl. 29-472.300.

Roudabush, Ned Wright, to Taylor's, Chas., Sons Company, The. Refractory articles for metal pouring tubes and the like. 3,846,145, Cl. 106-57.000.

Roundtree, Ural, Jr.: *See—*
Berkman, Samuel; and Roundtree, Ural, Jr., 3,845,738.

Rover Company Limited, The: *See—*
Bashford, Gordon Dennis, 3,845,987.

Rowe, D. Garth: *See—*
Jones, Cecil R.; Goldman, Arthur J.; and Rowe, D. Garth, 3,846,235.

Rowe, George E., to Emhart Corporation. Method for making glassware by a press and blow technique. 3,846,103, Cl. 65-79.000.

Rowland, David L. Folding chair. 3,845,984, Cl. 297-56.000.

Rowland, David L. Stackable seating units. 3,845,986, Cl. 297-239.000.

Royston, Marvin F.: *See—*
Reekie, James; and Royston, Marvin F., 3,845,929.

Rudnitsky, Jury Petrovich: *See—*
Buzhinsky, Igor Mikhailovich; Gapontsev, Valentin Pavlovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Sverchkov, Evgeny Ivanovich; Alesеev, Nikolai Eimovich; and Davydov, Boris Leonidovich, 3,846,142.

Rune, Par Axel. Corner joint for frame structures. 3,845,604, Cl. 52-758.00h.

Runninger, Frederick L., to Dunham-Bush, Inc. One piece radial vane diffuser and method of manufacturing the same. 3,845,903, Cl. 239-406.000.

Runstetler, Roy H. Oil purifying means employed in connection with internal combustion engines. 3,845,751, Cl. 123-196.00a.

Russell, Robert G., to Owens-Corning Fiberglass Corporation. Method for processing glass and forming fibers therefrom. 3,846,097, Cl. 65-2.000.

Rutchik, Walter L.: *See—*
Ryczek, Lawrence J.; Rutchik, Walter L.; and Van Zeeland, Donald L., 3,846,676.

Rutschke, Arno, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Tool change mechanism. 3,845,546, Cl. 29-568.000.

Ryabokovylenko, Viktor Ivanovich: *See—*
Romanov, Boris Mikhailovich; Moshnin, Evgeny Nikolaevich; Yanov, Stanislav Ivanovich; Gurevich, Vladimir Zakhrovich; and Ryabokovylenko, Viktor Ivanovich, 3,845,650.

Ryczek, Lawrence J.; Rutchik, Walter L.; and Van Zeeland, Donald L., to Cutler-Hammer, Inc. Electronic control system for remote control circuit breakers. 3,846,676, Cl. 317-33.0sc.

Ryuka, Fumitaka: *See—*
Harada, Isao; and Ryuka, Fumitaka, 3,846,032.

SABA, Schwarzwalder Apparate-bau-Anstalt August Schwer Sohne G.m.b.H.: *See—*
Maier, Gerhard, 3,846,724.

Sabatino, Anthony, to Gould Inc. Method of attaching a rope handle to a thin-walled battery. 3,845,542, Cl. 29-458.000.

Sabbah, Benjamin: *See—*
Suhami, Avraham; Sabbah, Benjamin; and Inbar, Dan, 3,846,630.

Sachko, William R. Lighted-cigarette dispensing machine. 3,845,881, Cl. 221-144.000.

Sachnik, Norman H. Material treating apparatus. 3,845,701, Cl. 99-323.500.

Safety, Inc.: *See—*
Howland, Raymond J., Jr., 3,845,576.

Saft Batteries Limited: *See—*
Shaw, Frank Donald, 3,846,179.

Sagami Chemical Research Center: *See—*
Nagai, Yoichiro; Ojima, Iwao; and Kogure, Tetsuo, 3,846,463.

Sahara, Masayoshi: *See—*
Yata, Koutaro; and Sahara, Masayoshi, 3,846,814.

Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, to Hitachi, Ltd. Method of producing multilayer wiring structure of integrated circuit. 3,846,166, Cl. 117-212.000.

Saint-Gobain Industries: *See—*
Eichmanns, Winfried Paul; Finken, Hans-Joachim; and Mager, Guenther Winand, 3,845,912.

Sakai, Toshiyuki: *See—*
Hirakawa, Hiroshi; and Sakai, Toshiyuki, 3,846,160.

Sakakura, Akira; Matsumoto, Fumio; Ueno, Kiyoshi; Takashima, Junihide; and Kuroki, Katuro, to Nippon Steel Corporation. Slab and plate cooling method for producing grain oriented electrical steel. 3,846,187, Cl. 148-112.000.

Sakamoto, Isamu, to Kokan Camera Laboratory Company Limited. Record controlled sewing machine. 3,845,731, Cl. 112-102.000.

Sakamoto, Yoichi; and Koyanagi, Yukio, to Matsushita Electric Co. Ltd. Channel selection device. 3,846,707, Cl. 325-334.000.

Sakata, Ryozo: *See—*
Ohashi, Takashi; and Sakata, Ryozo, 3,846,388.

Saleck, Wilhelm: *See—*
Hellmig, Erhard; Moll, Franz; Randolph, August; and Saleck, Wilhelm, 3,846,135.

Saluti, Gerald Michael, to American Cyanamid Company. Acrylonitrile-acrylate copolymers reinforced with grafted butadiene rubber. 3,846,509, Cl. 260-876.00r.

Salvo, Andrew D. Intonation guide for player of string instrument. 3,845,686, Cl. 84-485.000.

Salzer, Erwin, to Chase-Shawmut Company, The. High-voltage fuse including insulating mandrel for supporting fusible elements. 3,846,728, Cl. 337-159.000.

Sampey, Harry R., to Pentrol Industries, Inc. Vehicle performance computer. 3,846,701, Cl. 324-175.000.

Sandoz Ltd., a/k/a Sandoz AG: *See*—
Stadler, Paul; Stutz, Peter; and Guttmann, Stephan, 3,846,433.

Sandoz-Wander Inc.: *See*—
Buzzolini, Mario G., 3,846,496.

Sands, A. John. Phonograph record composition and process. 3,846,361, Cl. 260-28.500.

Sanitas Company Limited, The: *See*—
Stokes, John H.; and Cousins, Alexander G., 3,846,301.

Sano, Mitsuyoshi: *See*—
Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.

Santala, Teuvo J.: *See*—
Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,846,679.

Santen, Horst: *See*—
Horst, Wilfried; Schuppler, Emil; and Santen, Horst, 3,845,803.

Sarbacher, Robert I.: *See*—
Mauch, Robert E.; and Sarbacher, Robert I., 3,846,177.

Sargent Industries, Inc.: *See*—
Satterfield, Robert S.; and Chacko, Joseph, 3,845,920.

Sasaki, Hiroshi; and Ohno, Toshihiko, to Rion Co., Ltd. Electrostatic field measuring apparatus. 3,846,700, Cl. 324-72.000.

Sasanami, Tsuneo: *See*—
Midorikawa, Yoshinori; and Sasanami, Tsuneo, 3,846,246.

Sasayama, Takao, to Hitachi, Ltd. Computing device for an interpolation. 3,846,625, Cl. 235-152.000.

Sato, Kikuji: *See*—
Saiki, Atsushi; Mori, Takaaki; Harada, Seiki; and Sato, Kikuji, 3,846,166.

Sato, Kozi: *See*—
Nagata, Minoru; and Sato, Kozi, 3,846,821.

Sato, Masaki: *See*—
Okamoto, Haruki; Sato, Masaki; and Kusaka, Shunichi, 3,846,838.

Sato, Mikiko: *See*—
Okuyama, Toshiki; Sano, Mitsuyoshi; Manabe, Shinichi; Mine, Junichi; and Sato, Mikiko, 3,846,340.

Sato, Mitsuya: *See*—
Takahashi, Kazuya; Sato, Mitsuya; Ohta, Kaname; and Takamiya, Tadashi, 3,846,711.

Sato, Tai: *See*—
Nojima, Isao; Tamaru, Keikichi; and Sato, Tai, 3,846,766.

Satomi, Takeo: *See*—
Mine, Akihiko; Fujinami, Akira; Kameda, Nobuyuki; Hino, Naganori; Satomi, Takeo; and Tateishi, Kohshi, 3,846,441.

Satterfield, Robert S.; and Chacko, Joseph, to Sargent Industries, Inc. Inflatable evacuation ramp. 3,845,920, Cl. 244-137.00p.

Satterly, Kenneth P., to Witco Chemical Corporation. Polyurethane rigid foams from prepolymers. 3,846,347, Cl. 260-2.5af.

Savage, Michael Gary: *See*—
Horovitz, Beatrice; and Savage, Michael Gary, 3,846,835.

Savia, Risto Martti, to Oy Tampella AB. Pulp sifter with cleaning means. 3,845,863, Cl. 209-303.000.

Sawvell, Roger V.: *See*—
Scott, William B.; and Sawvell, Roger V., 3,845,680.

Schanzer, Wilhelm: *See*—
Berg, Gerhard; Nordsiek, Karl-Heinz; Maahs, Gunter; and Schanzer, Wilhelm, 3,846,365.

Schatz, Oskar; and Dieckmann, Uwe, to Krupp, Fried., Gesellschaft mit beschrankter Haftung. Charging device. 3,845,979, Cl. 294-88.000.

Schaufele, Robert F., to Owens-Illinois, Inc. Multiple gaseous discharge display-memory panel having decreased operating voltages. 3,846,670, Cl. 315-169.0tv.

Schaumann, Dietrich, to Hawera Probst KG Hartmetall Werkzeugfabrik Ravensburg. Drill, especially stone drill. 3,845,829, Cl. 175-395.000.

Scheer, C. F., & Cie, Firma: *See*—
Fritsch, Rudolf Paul, 3,845,681.

Scheer, Marcel: *See*—
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.

Scheffer, Dietrich: *See*—
Boden, Karl; Geweke, Werner; and Scheffer, Dietrich, 3,845,997.

Schehrer, Rudolf: *See*—
Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, 3,846,587.

Scheibe, Elias W., to General Motors Corporation. Metering pump. 3,846,052, Cl. 418-84.000.

Schekin, Vladimir Ivanovich; and Stepanov, Vasily Nikolaevich. High-voltage discharge arrangement for stripping foundry moulds off castings. 3,845,806, Cl. 164-250.000.

Schenkel, Klaus Dieter; Herzig, Wolfgang; Schehrer, Rudolf; and Hildenbrand, Rupert, to Licentia Patent-Verwaltungs-G.m.b.H. Data transmission system for a multiple branch network. 3,846,587, Cl. 179-15.0al.

Schering Aktiengesellschaft: *See*—
Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,846,428.

Schermerhorn, Jerry D., to Owens-Illinois, Inc. Multicelled display/memory gas discharge device having integral cell interconnections. 3,846,656, Cl. 313-188.000.

Schiavone, Edward L.: *See*—
Pinzone, Joseph A.; Troje, Gerald J.; and Schiavone, Edward L., 3,846,809.

Schick Incorporated: *See*—
Doyle, Edward J.; and Bagwell, Richard S., Jr., 3,846,614.

Schiessl, Henry W.: *See*—
Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., 3,846,424.

Schiff, Maurice L.: *See*—
Writer, Philip L.; and Schiff, Maurice L., 3,846,723.

Schiff, Sidney; and Kahle, Gerald R., to Phillips Petroleum Company. Lubricants containing reaction products of petroleum sulfonic acids and organic nitrogen polymers. 3,846,316, Cl. 252-33.000.

Schiler, Frederick S., to Portage Machine Company. Recirculating ball flat way bearing assembly. 3,845,993, Cl. 308-6.000.

Schiller, Edward: *See*—
Gooch, Beverley R.; and Schiller, Edward, 3,845,550.

Schimmerling, Michel. Selective index device. 3,845,579, Cl. 40-78.000.

Schliebs, Reinhard: *See*—
Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,846,513.

Schmaling, Roderick N.: *See*—
Ross, William A.; Schmaling, Roderick N.; and Olson, Warren E., 3,845,713.

Schmerling, Louis; and Vesely, Jerome A., to Universal Oil Products Company. Saturated hydrocarbon isomerization process. 3,846,503, Cl. 260-666.00p.

Schmerling, Louis; and Vesely, Jerome A., to Universal Oil Products Company. Saturated hydrocarbon isomerization process. 3,846,504, Cl. 260-666.000.

Schmidt, Frederick A.; and Carlson, Oscar N., to United States of America, Atomic Energy Commission. Method for preparing scandium metal. 3,846,121, Cl. 75-62.000.

Schmidt, Robert Rudolf: *See*—
Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,846,513.

Schmidt, Willi Johann; and Lumb, Hugo, to Kalle Aktiengesellschaft. Winding machine. 3,845,915, Cl. 242-68.400.

Schmitz, Lawrence S., to Westinghouse Electric Corporation. Programmable sequential logic circuit. 3,846,756, Cl. 340-147.0md.

Schnee, Wilhelm: *See*—
Hollweck, Walter; Schnee, Wilhelm; Eberl, Karlheinz; and Wagner, Kurt, 3,845,661.

Schneider, Irwin, to United States of America, Navy. Technique for information storage using anisotropic color centers in alkali halide crystals. 3,846,764, Cl. 340-173.0ls.

Schneider, Johannes; and Pungs, Wolfgang, to Dynamit Nobel Aktiengesellschaft. Polyamide shock absorber piston from terephthalic acid and branched diamine. 3,846,379, Cl. 260-78.00s.

Schnetger, Jochen, to Bayer Aktiengesellschaft. Process for the vulcanization and expansion of polychloroprene rubber with azodicarbonamide. 3,846,350, Cl. 260-2.50h.

Schnick, Arthur W.: *See*—
Petrucci, Raymond M.; and Schnick, Arthur W., 3,846,307.

Schnoring, Hildegard: *See*—
Winter, Gerhard; Mansmann, Manfred; Schon, Nikolaus; and Schnoring, Hildegard, 3,846,527.

Schofield, John A., to Union Carbide Corporation. Azeotropic composition. 3,846,327, Cl. 252-170.000.

Schold, George R. Apparatus for dispersing finely divided solid particles in a liquid vehicle. 3,845,938, Cl. 259-8.00.

Scholle, George L., to Compucolor, Incorporated. Method of making an envelope containing a separate enclosure sheet. 3,845,698, Cl. 93-61.00r.

Scholtholt, Josef: *See*—
Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.

Schon, Nikolaus: *See*—
Winter, Gerhard; Mansmann, Manfred; Schon, Nikolaus; and Schnoring, Hildegard, 3,846,527.

Schrader, Gerhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-alkyl-O-[3- (n-alkyl-carbamoyl)-benzaldoxime)-(thiono) (thiol)phosphoric (phosphonic) acid esters. 3,846,514, Cl. 260-938.000.

Schreiber, August; Schreiber, Erhard; and Schreiber, Berthold. Apparatus for the filtration and biological purification of contaminated water. 3,846,305, Cl. 210-150.000.

Schreiber, Berthold: *See*—
Schreiber, August; Schreiber, Erhard; and Schreiber, Berthold, 3,846,305.

Schreiber, Erhard: *See*—
Schreiber, August; Schreiber, Erhard; and Schreiber, Berthold, 3,846,305.

Schroder, Eberhard: *See*—
Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,846,428.

Schroder, Horst: *See*—
Halliger, Leonhard; and Schroder, Horst, 3,846,034.

Schroder, Johann, to U.S. Philips Corporation. Heat accumulator. 3,845,625, Cl. 60-524.000.

Schroeder, Harold H.: *See*—
Erhart, Francis J.; and Schroeder, Harold H., 3,845,739.

Schromm, Kurt: *See*—
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.

Schulin, Gotthilf, to Stihl, Andreas, Maschinenfabrik. Portable implement, especially motor chain saw. 3,845,827, Cl. 173-162.000.

Schultz, Fritz, to Farbenfabriken Bayer Aktiengesellschaft. Sparingly-soluble kallikrein-inactivator derivative and processes involving said derivative. 3,846,544, Cl. 424-95.000.

Schultz, George: *See*—
Dziki, Michael M.; Schultz, George; and Markow, Elliott W., 3,846,702.

Schuppler, Emil: *See*—
Horst, Wilfried; Schuppler, Emil; and Santen, Horst, 3,845,803.

Schwarz, Herbert, to Farbenfabriken Bayer Aktiengesellschaft. Separation and purification of crude 1,4-dicyano-2-butene. 3,846,471, Cl. 260-465.80r.

Schwarz, Karl E.; and Yeman, Donald E., to BMT Manufacturing Corporation. Helical screw-type conveyor. 3,845,855, Cl. 198-213.000.

Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, to United States of America, Agriculture. Arthropod maturation inhibitors. 3,846,451, Cl. 260-348.00a.

Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, to United States of America, Agriculture. Arthropod maturation inhibitors. 3,846,458, Cl. 260-404.000.

Schwarz, Werner. Apparatus for comminuting trash. 3,845,907, Cl. 241-36.000.

Schwee, Leonard J.; and Irons, Henry R., to United States of America, Navy. Serial access memory using magnetic domains in thin film strips. 3,846,770, Cl. 340-174.0fb.

Scott, Charles E., to Mallory, P. R., & Co., Inc. Solid-state timer switch providing AC power to a load for a predetermined time after a main source of power is removed. 3,846,648, Cl. 307-293.000.

Scott Paper Company: *See*—
Vasilyadis, Kosta O., 3,846,158.
Wade, Gordon E., 3,846,526.

Scott, William B.; and Sawvell, Roger V., to Whitney, W. A., Corporation. Hydraulic punch press with mechanism for adjusting stripper. 3,845,680, Cl. 83-146.000.

Scrimshaw, Marvin Seymour: *See*—
Hill, Eugene Emerson; and Scrimshaw, Marvin Seymour, 3,846,745.

Seecamp, Louis W., to Mossberg, O. F., & Sons, Inc. Sear-disconnector for firearms. 3,845,688, Cl. 89-146.000.

Seeliger, Wolfgang; and Hesse, Karl-Dieter, to Chemische Werke Huls Aktiengesellschaft. 4H-5,6-Dihydro-1,3-oxazines. 3,846,419, Cl. 260-244.00r.

Seibert, Gerhard; and Pitowski, Hans-Jurgen, to Akzo N.V. Process for producing a soft, drapable artificial leather. 3,846,156, Cl. 117-63.000.

Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, 3,846,815.

Sekine, Jiro, to Fuji Photo Film Co., Ltd. Automatic exposure control device for photographic cameras. 3,846,807, Cl. 354-42.000.

Selco Mining Corporation Limited: *See*—
Otte, Hubert Josef; and Roosman, Gosta, 3,845,569.

Selector-Micro Company Limited: *See*—
Malyon, Brian R., 3,846,686.

Seltzer, Raymond; and Gordon, David A., to Ciba-Geigy Corporation. 4,6-Bis(alkaryl)-s-triazines. 3,846,422, Cl. 260-248.0cs.

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Imines, their preparation and their pharmaceutical use. 3,846,413, Cl. 260-240.00g.

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Imines, their preparation and their pharmaceutical use. 3,846,414, Cl. 260-240.00g.

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Imines, their preparation and their pharmaceutical use. 3,846,415, Cl. 260-240.00g.

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Imines, their preparation and their pharmaceutical use. 3,846,425, Cl. 260-250.0qn.

Senturk, Necdet; and Aschenbrenner, Frank A., to Electrospin Corporation, mesne. Method and apparatus for producing composite yarn. 3,845,611, Cl. 57-5.000.

Sephton, Hugo H. Interface enhancement applied to evaporation of liquids. 3,846,254, Cl. 203-11.000.

Sergeeva, Ljudmila Semenovna: *See*—
Fedjukin, Dmitry Lvovich; Sergeeva, Ljudmila Semenovna; Bakharev, Andrei Nikolaevich; Gorlina, Inna Leonidovna; Aronov, Anatoly Izrailevich; Kravets, Arkady Timofeevich; Korochkin, Petr Evmenovich; and Titov, Alexei Ivanovich, 3,846,611.

Seto, David K.: *See*—
Duncan, Bernard F.; and Seto, David K., 3,846,259.

Seymour, Samuel L., to PPG Industries, Inc. Handling glass sheets for shaping and cooling. 3,846,104, Cl. 65-104.000.

Seymour, Samuel L., to PPG Industries, Inc. Tempering glass sheets. 3,846,106, Cl. 65-114.000.

Shackle, Peter William: *See*—
Riley, Terence James; and Shackle, Peter William, 3,846,822.

Shaffer, Edward C., to Minnesota Mining & Manufacturing Company. Film-holder for exposing X-ray film. 3,846,635, Cl. 250-480.000.

Shakhov, Eduard Konstantinovich: *See*—
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,846,699.

Shallbetter, George H., to States Electric Manufacturing Co. Overhead electrical switching device. 3,846,604, Cl. 200-168.00d.

Shamp, Donald E.: *See*—
Montgomery, Eldwin C.; Shamp, Donald E.; and Swillinger, Francis L., 3,846,109.

Shang, Jer-Yu; and Wynkoop, Raymond, to Sun Research and Development Co. Ammoxidation process. 3,846,473, Cl. 260-465.00c.

Shank, Wayne C., to Avco Corporation. Turbomachine assembly. 3,846,044, Cl. 416-199.000.

Shapcott, Nigel G.: *See*—
Rogers, Peter C.; Harrison, Frank B.; Hipkiss, Richard C.; Sunasky, Joseph; and Shapcott, Nigel G., 3,845,718.

Shapiro, L. Dennis: *See*—
Galvin, Aaron A.; and Shapiro, L. Dennis, 3,846,778.

Shapland, James T., to United States Steel Corporation. Refractory pouring tube. 3,845,943, Cl. 266-38.000.

Sharp, David E.: *See*—
Sharp, James G.; and Sharp, David E., 3,845,610.

Sharp, Ellis Alvin; and Dolan, Courtney F., to Chrysler Corporation. Full time slip controlled four wheel drive. 3,845,671, Cl. 74-710.500.

Sharp, James G.; and Sharp, David E. Blade construction for fruit harvesting machine. 3,845,610, Cl. 56-328.00r.

Sharp Kabushiki Kaisha: *See*—
Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, 3,846,802.
Yoshida, Kunio; and Tsugawa, Kenjiro, 3,846,626.

Sharp, Shelby P.; and Sudduth, Lamar F., to Amoco Production Company. Method for removing elemental sulfur from wells and flowlines. 3,846,311, Cl. 252-8.55b.

Shatterproof Glass Corporation: *See*—
Bunk, Albert R.; and Bennett, Bailey, 3,846,370.

Shaw, David V.: *See*—
Popeil, Samuel J.; and Shaw, David V., 3,845,518.

Shaw, Frank D. Therapeutic boot. 3,845,769, Cl. 128-165.000.

Shaw, Frank Donald, to Saft Batteries Limited. Battery cell spacer. 3,846,179, Cl. 136-171.000.

Shaw, John N.: *See*—
Petrella, Joseph R.; Shaw, John N.; and Peternel, Jacob R., 3,846,105.

Shell Oil Company: *See*—
Lintzenich, Vincent G., 3,846,317.

Shelton, Winston L.; and Newman, Joseph L., to Quik-Die, Inc. Apparatus for manufacturing sheet-cutting female dies. 3,845,812, Cl. 164-335.000.

Shen, Tsung-Ying; Walford, Gordon L.; and Witzel, Bruce E., to Merck & Co., Inc. 3-Substituted-2-pyridones and 3-substituted-2-thiopyridones in the treatment of pain, fever or inflamation. 3,846,553, Cl. 424-263.000.

Shennan, Jean Lindsay: *See*—
Evans, Gordon Homer; and Shennan, Jean Lindsay, 3,846,238.

Shepherd, Glen C., to Texas Instruments, Incorporated. Defrost cycle initiation system. 3,845,637, Cl. 62-156.000.

Shepherd, Graham, to Elliott Brothers (London) Limited. Magnetic data storage arrangement having sequential addressing of rows. 3,846,769, Cl. 340-174.00m.

Sheppard, Chester Stephen: *See*—
D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,846,396.

Sheppard, Francis Ernest. Motor cycle construction. 3,845,834, Cl. 180-33.00a.

Sherman, Marshall L.: *See*—
Zimmerman, Gilbert A.; and Sherman, Marshall L., 3,846,195.

Shetty, Bola Vithal, to Pennwalt Corporation. 2-Benzazepinylalkylamino-benzamide derivatives. 3,846,408, Cl. 260-239.0bb.

Shetty, Bola Vithal, to Pennwalt Corporation. 1-(Phthalimido-alkyl)-1,2,3,4-tetrahydroquinazolinones and analogues thereof. 3,846,427, Cl. 260-256.40q.

Shibata, Tsutomu: *See*—
Nakashima, Tsuyoshi; and Shibata, Tsutomu, 3,846,098.

Shigeyasu, Motoo; Kuihara, Kenzo; and Kuki, Michio, to Maruzen Oil Co., Ltd. Process for the production of fiber grade terephthalic acid. 3,846,487, Cl. 260-524.00r.

Shih, Kwang K.: *See*—
Blum, Joseph M.; and Shih, Kwang K., 3,846,191.

Shih-Yuan Ro, Rolland, to Du Pont de Nemours, E. I., and Company. Masterbatching elastomer blends. 3,846,371, Cl. 260-42.330.

Shimada, Katsutoshi: *See*—
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,846,480.

Shimada, Nobuyoshi: *See*—
Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.

Shimazaki, Toshikazu: *See*—
Okawara, Yasuo; Shimazaki, Toshikazu; and Mizutani, Nagao, 3,846,581.

Shimp, Alan B., to Westinghouse Electric Corporation. Molded case circuit breakers utilizing saturating current transformers. 3,846,675, Cl. 317-33.00r.

Shindarov, Lubomir Mihaylov; Galabov, Angel Simenov; and Antonov, Dimitar Simov, to Medizinska Akademia. Derivatives of n-2-hydroxyphenylthiourea. 3,846,491, Cl. 260-552.00r.

Shlyandin, Viktor Mikhailovich: *See*—
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich, 3,846,699.

Shook, Howard E., Jr., to Du Pont de Nemours, E. I., and Company. Process of preparing a zerovalent nickel complex with organic phosphorus compounds. 3,846,461, Cl. 260-439.00r.

Shtepa, Pavel Korneevich: *See*—
Korotenko, Boris Evdokimovich; Korotenko, Vitaly Borisovich; and Shtepa, Pavel Korneevich, 3,846,653.

Shubin, Vladimir Nikolaevich; Silantiev, Viktor Sergeevich; Khlyntsev, Alexandr Sergeevich; and Barsova, Antonina Petrovna. Cantilever bending head of a tube bending machine. 3,845,648, Cl. 72-173.000.

Siegmann, Arnon, to Allied Chemical Corporation. Method of producing polyethylene terephthalate fibers. 3,846,377, Cl. 260-75.00t.

Siemens & Halske Aktiengesellschaft: *See*—
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Siemens Aktiengesellschaft: *See*—
Dernbach, Berthold; Jurisch, Ewald; and Landgraf, Helmut, 3,845,879.
Franz, Karl; and Christigau, Hermann, 3,846,654.
Hoffmann, Fritz, 3,846,602.
Kuhl, Dieter, 3,846,176.
Murrmann, Helmuth, 3,846,192.
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Romandi, Denes, 3,846,633.
Silbermann, Erich, 3,846,576.
Wagner, Jakob, 3,845,721.
Warden, Hans Erik; Kindvall, Frank; and Berg, Carls Olof, 3,845,946.

Siemon Company, The: *See*—
McLain, Travis R., 3,846,590.

Sievers, Robert E. Rare earth complexes as nuclear magnetic resonance shift reagents. 3,846,333, Cl. 252-408.000.

Sigg-Grutter, Trudi: *See*—
Wild, Jost; and Sigg-Grutter, Trudi, 3,846,498.

Sigl, Edward D.: *See*—
Herr, Robert W.; Sigl, Edward D.; and Aksamit, Marion W., 3,845,850.

Silantiev, Viktor Sergeevich: *See*—
Shubin, Vladimir Nikolaevich; Silantiev, Viktor Sergeevich; Khlyntsev, Alexandr Sergeevich; and Barsova, Antonina Petrovna, 3,845,648.

Silbermann, Erich, to Siemens Aktiengesellschaft. Partition with openings for plugging through voltage-carrying contacts. 3,846,576, Cl. 174-67.000.

Sim-Chem Limited (formerly Simon-Carves Chemical Engineering Ltd.): *See*—
Thompson, Allen, 3,846,706.

Simmons, George A., to Owens-Illinois, Inc. Glass-ceramic and process therefor. 3,846,099, Cl. 65-30.000.

Simmons, William A., Jr.: *See*—
Aldrich, Ralph E.; and Simmons, William A., Jr., 3,846,014.

Simon, Stefan: *See*—
Friese, Axel; and Simon, Stefan, 3,845,767.

Simon, Stefan, to Hahn, Carl, Dr., GmbH. Apparatus for pressing absorbent cotton articles, particularly tampons for feminine hygiene. 3,845,520, Cl. 19-144.500.

Sims, Marc J., to Chevron Research Company. Lubricant composition containing dispersed alkali metal borate. 3,846,313, Cl. 252-18.000.

Sinclair, Clive Marles. Electronic digital displays. 3,846,784, Cl. 340-336.000.

Sinding, John R. Bottle with an inverted position support and sealing ring. 3,845,884, Cl. 22?-173.000.

Singer Company, The: *See*—
McCanney, Neil R., 3,845,572.
Rockwell, Jerry E., 3,846,003.

Singleton, Albert. Plating barrel with spiral sides. 3,846,271, Cl. 204-213.000.

Siojima, Katuhiko: *See*—
Kyotani, Hirosi; Murono, Yositaka; and Siojima, Katuhiko, 3,846,802.

Sisk, Francis J., to Westinghouse Electric Corporation. Separating phenol from phenol-water subazeotrope by treatment with brine. 3,846,255, Cl. 203-18.000.

SKF Industrial Trading and Development Company, B.V.: *See*—
Halliger, Leonhard; and Schroder, Horst, 3,846,034.

Skil Corporation: *See*—
Beisch, Hanspeter E., 3,845,826.

Skurkiss, Peter Kenny: *See*—
MacArthur, Donald Morley; and Skurkiss, Peter Kenny, 3,846,196.

Slagle, William E., to Lincoln Hall Research Co. Liquor supply for an automated liquor dispensing system. 3,845,787, Cl. 137-571.000.

Slobod, Robert L.; and Burcik, Emil J. Method of sealing coal against methane emission. 3,845,632, Cl. 61-36.00r.

Slosberg, Earl; and Williams, Samuel D., Jr., to Plastics Development Corporation of America. Recording stethoscope. 3,846,585, Cl. 179-1.0st.

Smith, A. O., Corporation: *See*—
Cohen, David J., 3,845,843.
Lykes, Robert E., 3,846,652.

Smith, Arthur G.: *See*—
Huff, John C.; Ludwig, Frank A.; and Smith, Arthur G., 3,846,182.

Smith, Dean B. Retention suture device and method. 3,845,772, Cl. 128-335.000.

Smith, Herman P.: *See*—
Keene, Charles L., 3,846,042.

Smith, Joseph L., Jr.; and Thullen, Philip, to Massachusetts Institute of Technology. Relatively rotatable cryogenic transfer system. 3,845,639, Cl. 62-505.000.

Smith, Lawrence S. Slope indicator and roll-over warning indicator for earth moving equipment. 3,846,781, Cl. 340-267.00r.

Smith, Norman Douglas Patrick: *See*—
Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, 3,846,090.
Osmond, Desmond Wilfrid John; Smith, Norman Douglas Patrick; and Waite, Frederick Andrew, 3,846,091.

Smith, Randal M., to PPG Industries, Inc. Float glass bath having submerged extension tiles. 3,846,108, Cl. 65-182.00r.

Smith, Rex L.: *See*—
Love, Roy F.; and Smith, Rex L., 3,846,010.

Smith, Russell D.: *See*—
Ebeling, Harold O.; and Smith, Russell D., 3,846,066.

Smith, William R., to Textron, Inc. Turret lathe. 3,845,532, Cl. 29-40.000.

Smithey, Walter A., to American Cyanamid Company. High luster, antisoiling acrylic fibers. 3,846,226, Cl. 161-178.000.

Smollinger, Carl W., to Bethlehem Steel Corporation. Vibration damped fitting. 3,846,033, Cl. 403-220.000.

Snam Progetti S.p.A.: *See*—
Perrotti, Emilio; and Cipriant, Gioacchino, 3,846,468.

Snape, Edwin: *See*—
Larson, Floyd Gotthard, Jr.; and Snape, Edwin, 3,846,344.

Sniker, Dagnia Yanovna: *See*—
Giller, Solomon Aronovich; Lazdinsh, Arvid Avgustovich; Veinberg, Artur Karlovich; Sniker, Dagnia Yanovna; Knunyants, Ivan Ljudvigovich; German, Lev Solomonovich; and Kazmina, Natalya Borisovna, 3,846,429.

Snodgrass, Hugh E.: *See*—
Lauchlan, Robert L.; and Snodgrass, Hugh E., 3,846,510.

Sobajima, Masaru; and Kato, Iinichi, to Nippon Kogaku Kabushiki Kaisha. Measurement microscope. 3,846,008, Cl. 350-10.000.

Societa Italiana Resine S.I.R. S.p.A.: *See*—
Di Fiore, Lucio; and Calcagno, Benedetto, 3,846,334.

Societe Anonyme dite: Aquitaine Total Organico Tour Aquitaine : *See*—
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Societe Anonyme dite: Hexachimie: *See*—
Cognacq, Jean-Claude, 3,846,436.

Societe Anonyme dite: L'Oreal: *See*—
Handjani, Rose-Marie, nee Vila; and Zabotto, Arlette, nee Arribau, 3,846,556.
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Societe des Aciers Fins de l'Est: *See*—
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Societe Europeene de Propulsion: *See*—
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Societe Honeywell Bull (Societe Anonyme): *See*—
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Jossic, Alain Francois, 3,846,684.

Societe Industrielle Honeywell Bull (Societe Anonyme): *See*—
Gosset, Cyrille, 3,846,758.

Societe Internationale de Mecanique Industrielle, S.A.: *See*—
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Societe Nationale des Poudres et Explosifs: *See*—
Leclercq, Marius; Morin, Daniel Louis; Damien, Michael Henri; and Andreani, Monique Andree, 3,846,224.

Sokolov, Alexandr Yakovlevich: *See*—
Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.

Solar, Serge: *See*—
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Solheim, Karsten. Gold club indicia. 3,845,955, Cl. 273-77.00a.

Somfai, Eva: *See*—
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Matyas, Jakab; Petroczy, Istvan; Somfai, Eva; and David, Agoston, 3,846,567.

Sommer, Peter J., to American Gage & Machine Company. Gage block. 3,845,560, Cl. 33-168.00r.

Sonnet, Philip E.: *See*—
Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,451.
Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, 3,846,458.

Sorimachi, Mitsuo, to Tokyo Hoshiden Kabushiki Kaisha. Current limiter. 3,846,729, Cl. 337-343.000.

Sortex Company of North America, Inc.: *See—*
Chapman, Robert R., 3,845,705.
Gillespie, Robert M., 3,845,703.
Souchek, Dwaine G.: *See—*
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Souffie, Robert David: *See—*
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Soukeras, John E. Safe personal effects pouches and strap means for under arm or shoulder wear. 3,845,522, Cl. 24-74.00a.
Soukup, Victor G.: *See—*
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South Bend Range Corporation: *See—*
Rosenberg, Robert B.; Nesbitt, John D.; and Fejer, Mark E., 3,846,565.
Sowers, Blaine E.; and Hunnicutt, Vaughn E., to North American Van Lines, Inc. Loading and unloading device. 3,845,869, Cl. 212-65.000.
S.p.A. Luigi Franchi: *See—*
Zanoni, Ernesto, 3,845,689.
Spaan, Harry C., to Carando Machine Works. Die-stabilizing mechanism for a split flanging die unit. 3,845,656, Cl. 72-392.000.
Spangemacher, Kurt, to Maschinenbau-Aktiengesellschaft Balcke. Method of preventing the formation of clouds of gas or smoke on cooling towers, and cooling tower for carrying out the method. 3,846,519, Cl. 261-151.000.
Spangenberg, William C.: *See —*
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Spangler, Edward O.: *See—*
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Spanjersberg, Arie Adriaan, to De Staat der Nederlanden, Ten deze Vertegenwoordigd Door de Directeur-General der Posterijen, Telegrafie en Telefonie. Automatic address detection system. 3,846,753, Cl. 340-146.30d.
Spaulding, Tedford H., to Bunker Ramo Corporation. Electrical connector unit for leadless circuit device. 3,846,737, Cl. 339-174.000.
Sperry Rand Corporation: *See—*
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Spiegelberg, Hans: *See—*
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Spiess, C. F., & Sohn: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
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Stachel, Adolf: *See—*
Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
Stachel, Ingeburg Lydia Katharine: *See—*
Raabe, Thomas; Stachel, Adolf; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,846,470.
Stadler, Paul; Stutz, Peter; and Guttmann, Stephan, to Sandoz Ltd., a/k/a Sandoz AG. Process for preparing ergot alkaloids. 3,846,433, Cl. 260-285.500.
Stafford, Neil S.: *See—*
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Stalker Corporation, The: *See—*
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Stalker, Edward A., to Stalker Corporation, The. Axial flow compressor. 3,846,039, Cl. 415-206.000.
Stalker, Gerald C.; and Pearce, Roscoe L., to Dow Chemical Company, The. Purification of oxygenated organic compounds. 3,846,450, Cl. 260-340.200.
Stamicarbon N.V.: *See—*
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Standard Car Truck Company: *See—*
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Stanton, Walter O. Phonograph pickup cartridge for four channel recordings. 3,846,592, Cl. 179-100.4lk.
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Stauffer, Norman L., to Honeywell Inc. Sensitivity balancing apparatus for photo responsive detecting circuits. 3,846,629, Cl. 250-201.000.
Stauffer, Norman L., to Honeywell Inc. Recording and playback apparatus. 3,846,830, Cl. 360-56.000.
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Stevens, Franklyn, Jr., to Cohn, Sigmund, Corporation. Gold alloy composition. 3,846,125, Cl. 75-165.000.
Stevens, Roger H., to International Farm Systems, Inc. Method for converting animal waste products into a food supplement. 3,846,558, Cl. 426-2.000.
Stevens, Roger H., to International Farm Systems, Inc. Method for converting animal waste products into a food supplement. 3,846,559, Cl. 426-2.000.
Stewart, Floyd C.; Weeks, Daniel W.; and Belcher, Brian E., to TOCOM, Inc. Noise control system for transmission network. 3,846,703, Cl. 325-53.000.
Stihl, Andreas, Maschinenfabrik: *See—*
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Streeter, Daniel D., Jr. Reinforcement mat for tire. 3,846,216, Cl. 161-49.000.
Strimple, Robert A.; McCall, George L.; and Walker, Robert L., to Bethlehem Steel Corporation. Apparatus for continuously measuring temperature in a furnace. 3,845,706, Cl. 73-359.000.
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Su, Aaron Chung Liong, to Du Pont de Nemours, E. I., and Company. Chain saturated copolymers of ethylene, alph monoolefins, and trienes containing side-chains with non-terminal conjugated unsaturation. 3,846,387, Cl. 260-80.780.
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Sugimoto, Mitsuo; and Watanabe, Hiroshi. Method of producing large single crystals of mixed ferrites. 3,846,322, Cl. 252-62.620.
Suhami, Avraham; Sabbah, Benjamin; and Inbar, Dan. Method for identifying elemental areas of a photocathode. 3,846,630, Cl. 250-207.000.
Sullivan, Michael F., to Eastman Kodak Company. Certain activator-toners in photosensitive and thermosensitive element, composition and process. 3,846,136, Cl. 96-114.100.
Sullivan, Wayne N., to Jackson, Byron, Inc. Float valve for drill strings. 3,845,784, Cl. 137-515.000.
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Sundermann, Henry L. Telescoping tongue means usable for setting brakes on a farm wagon. 3,845,846, Cl. 188-112.000.
Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich. Method of and means for determining the threshold of surface temperatures of heated elements of machines, artiles and other equipment. 3,845,662, Cl. 73-358.000.
Surrall, Alan John; and Candlin, Peter Philip, to British Leyland Truck and Bus Division Limited. Method for making regenerative heat-exchanger seals. 3,845,545, Cl. 29-494.000.
Sustarsic, John D.: *See—*
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Svarz, Jerry J., to Nalco Chemical Company. Conversion of nitrile to its corresponding amide using improved copper oxide catalyst. 3,846,495, Cl. 260-561.00n.
Sverchkov, Evgeny Ivanovich: *See—*
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Tabata, Yoneho, to Japan Atomic Energy Research Institute. Method for cross-linking copolymer of tetrafluoroethylene and propylene by ionizing radiation. 3,846,267, Cl. 204-159.170.
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Takita, Tomohisa: *See—*
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Tanimoto, Kenji. Trigger circuit for use with multivibrators. 3,846,647, Cl. 307-273.000.

Taniquchi, Umeyuki. Engineers. 3,845,563, Cl. 33-107.00r.
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Tinsley, John M., to Halliburton Company. Fracturing subterranean formations without damaging the formation. 3,845,824, Cl. 166-308.000.
Tipnis, Vijayakumar A., to Republic Steel Corporation. Stainless steel having improved machinability. 3,846,186, Cl. 148-37.000.
Tipnis, Vijayakunar A. Stainless steel having improved machinability. 3,846,189, Cl. 148-135.000.
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Towns, Edward Johnson; and Brindisi, Anthony Thomas. Containers and safety closure therefor. 3,845,872, Cl. 215-9.000.
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Wolbrink, David W.; and Busch, Robert W., to Broan Manufacturing Co., Inc. Blower wheel. 3,846,043, Cl. 416-183.000.

Wolcke, Uwe: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,846,476.

Wolf, Leo. Slide switch for electrical strip cable. 3,846,596, Cl. 200-16.00d.

Wolfe, John E.; Ledges, George E.; and Glascock, Homer H., to General Electric Company. Electron beam generating system with collimated focusing means. 3,846,660, Cl. 313-421.000.

Wollmann, Klaus; Ploger, Walter; and Worms, Karl-Heinz, to Henkel & Cie GmbH. Process for the preparation of 1-aminoalkane-1,1-diphosphonic acids and their salts. 3,846,420, Cl. 260-247.000.

Woods, Andrew B.: *See—*
Brown, James E.; Woods, Andrew B.; and Kliger, Howard S., 3,846,797.

Woods, Quentin T.: *See—*
Eggert, Ralph H.; and Woods, Quentin T., 3,845,678.

Wootten, William A. Fiber or paper board structure. 3,846,218, Cl. 161-111.000.

Worms, Karl-Heinz: *See—*
Wollmann, Klaus; Ploger, Walter; and Worms, Karl-Heinz, 3,846,420.

Wright, Donald L.; and Frankenfeld, John W., to Exxon Research and Engineering Company. Bacteriostat soap, shampoo and shave lotion formulations. 3,846,326, Cl. 252-107.000.

Wright, Harry Gilbert: *See—*
Livingston, Daniel K.; Floden, Bjorn Fritjof; Wright, Harry Gilbert; and Tsien, Wei Hwa, 3,845,916.

Wright, Maurice James; and Cockshott, Charles Peter, to Lucas Aerospace Limited. Flame-detection circuits. 3,846,061, Cl. 431-79.000.

Writer, Philip L.; and Schiff, Maurice L., to United States of America, Navy. Surface wave narrow bandpass filter. 3,846,723, Cl. 333-72.000.

Wyatt, William Kirk, to Turbo Machine Company. Winder. 3,845,911, Cl. 242-18.0dd.

Wynkoop, Raymond: *See—*
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Acquaviva, Thomas; and Kukucka, William P., 3,845,949.
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Yamada, Takao; and Sunakawa, Kiyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha and Toshiba Machine Co., Ltd. Apparatus for conveying synthetic resin-made articles in the sheet form. 3,846,817, Cl. 354-319.000.

Yamada, Takashi: *See—*
Oishi, Kazuo; Kato, Toshiaki; Matsui, Takeshi; Hinachi, Matatoyo; and Yamada, Takashi, 3,846,796.

Yamagishi, Hidehisa; and Yokoi, Fumitoshi, to Nippon Kokan Kabushiki Kaisha. Apparatus for manufacturing steel sheets with layers of protective metal. 3,845,539, Cl. 29-420.000.

Yamaguchi, Isao; and Katayama, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Electrophotographic copying apparatus. 3,846,019, Cl. 355-3.00r.

Yamaguchi, Yasuju; and Nakayama, Yujiro, to Mitsubishi Petrochemical Company Limited. Production of shaped structures. 3,846,265, Cl. 204-159.012.

Yamamoto, Akira; Nakaoji, Kunio; Oohara, Kunio; Momiyama, Zenjiro; Murakami, Heiichiro; and Tomita, Akira. Cross-linked copolymer acrylonitrile fibers or films. 3,846,386, Cl. 260-80.720.

Yamazaki, Hiroyuki: *See—*
Ando, Takuo; and Yamazaki, Hiroyuki, 3,846,363.

Yanchenko, Larisa Nikolaevna: *See—*
Surgina, Ninel Leonidovna; Gurevich, Ljudmila Ivanovna; Yanchenko, Larisa Nikolaevna; Bei, Tamara Alexandrovna; and Baikov, Valentin Nikolaevich, 3,845,662.

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Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich, 3,845,704.

Yarborough, J. Michael, to Coherent Radiation. Multiple dye stream laser. 3,846,715, Cl. 331-94.500.

Yasuda, Michio: *See—*
Oka, Mitsunori; and Yasuda, Michio, 3,846,754.

Yasui, Satoshi: *See—*
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Yata, Kotaro; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Automatic flash device for a photographic camera. 3,846,806, Cl. 354-31.000.

Yata, Koutaro; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Electrical exposure control device for photographic cameras. 3,846,814, Cl. 354-226.000.

Yazawa, Masahide, to Polymer Processing Research Institute Ltd. Method for producing laminated materials of fibers. 3,846,205, Cl. 156-291.000.

Yeman, Donald E.: *See—*
Schwarz, Karl E.; and Yeman, Donald E., 3,845,855.

Ylonen, George. Excavating apparatus. 3,845,989, Cl. 299-13.000.

Yogev, Amnon: *See—*
Bronicki, Lucien Yehuda; and Yogev, Amnon, 3,845,628.

Yokohama Rubber Co., Ltd., The: *See—*
Hirakawa, Hiroshi; and Sakai, Toshiyuki, 3,846,160.

Yokoi, Fumitoshi: *See—*
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Yokota, Ken: *See—*
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Mifune, Akira; Katsuda, Yoshio; and Yoneda, Toyoaki, 3,846,551.

Yoshida Kogyo Kabushiki Kaisha: *See—*
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Yoshida, Kunio; and Tsugawa, Kenjiro, to Sharp Kabushiki Kaisha. Electronic desk calculator with verification function. 3,846,626, Cl. 235-153.0bk.

Yoshida, Soushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, to Kobe Steel, Ltd. Apparatus for withdrawal of cured tires from a press for shaping and curing tires. 3,846,058, Cl. 425-38.000.

Yossa, Frank A.: *See—*
Raabe, Francis O.; and Yossa, Frank A., 3,846,190.

Young, Dean Arthur, to Union Oil Company of California. Phosphate-silica-aluminosilicate compositions of improved crushing strength and methods of preparing the same. 3,846,337, Cl. 252-437.000.

Young, Frederick J.; Thompson, Francis T.; and Boomgaard, Dirk J., to Westinghouse Electric Corporation. Position indication system. 3,846,771, Cl. 340-195.000.

Young, William D.: *See—*
Kronish, Donald P.; Zuriff, Lee S.; Young, William D.; and Lewandowski, Paul R., 3,846,247.

Youtsey, Karl J.; Holt, William C., Jr.; and Carnahan, Robert D., to Universal Oil Products Company. Electrical resistor inks. 3,846,140, Cl. 106-20.000.

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Handjani, Rose-Marie, nee Vila; and Zabotto, Arlette, nee Arribau, 3,846,556.

Zaffaroni, Alejandro, to Alza Corporation. Intrauterine contraceptive anti-fertility device for the management of reproduction. 3,845,761, Cl. 128-130.000.

Zahalka, Jindrich; Plander, Emil; and Grac, Zdenek, to Ustav pro vyzkum, vyrobu a vyuziti radioisotopu. Process for preparing 1,1,1-trichloroethane. 3,846,268, Cl. 204-163.0he.

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Umezawa, Hamao; Maeda, Kenji; Takita, Tomohisa; Nakayama, Yuya; Fujii, Akio; Shimada, Nobuyoshi; and Chimura, Hideo, 3,846,400.

Zanoni, Ernesto, to S.p.A. Luigi Franchi. Breech-block for automatic guns, more particularly automatic shotguns. 3,845,689, Cl. 89-181.000.

Zavyalov, Sergei Ivanovich: *See—*
Aronova, Nina Ivanovna; Makhova, Nina Nikolaevna; Zavyalov, Sergei Ivanovich; Volkenshtein, Jury Borisovich; and Kunitskaya, Galina Mikhailovna, 3,846,490.

Zech, John D., to ICI America Inc. Esters of lactic acid and fatty alcohols. 3,846,479, Cl. 260-484.00a.

Zehr, Phyllis Joan Lane; Lank, Monita May Thorp; and Lank, Psych, to Reactor Accelerator Development International, Inc. Method and means for utilizing accelerated neutral particles. 3,846,636, Cl. 250-499.000.

Zeile, Karl: *See*—
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; Schromm, Kurt; Guenard, Jeanette; Renth, Ernst-Otto; and Stotzer, Harry, 3,846,549.

Zellweger AG: *See*—
Forgo, Gabor; Meyer, Erwin; and Moser, Karl, 3,846,150.

Zen, Giovanni. Lightweight concrete panel. 3,845,593, Cl. 52-144.000.

Zenno, Hisanao: *See*—
Tanaka, Kunihiko; Kishimoto, Teiji; and Zenno, Hisanao, 3,846,432.

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Zhislin, Yakov Moiseevich; Kirkunov, Alexandr Eliseevich; Sokolov, Alexandr Yakovlevich; Ivanoz, Alexei Ivanovich; Leikin, Albert Yakovlevich; Grinberg, Efim Naumovich; Vinogradov, Vyacheslav Dmitrievich; Yanovskaya, Zinaida Solomonovna; and Bykov, Valery ndreevich. Air-blast grain huller. 3,845,704, Cl. 99-519.000.

Ziegler, Clarence B., Jr. Rotary programmer with declutchable cams and tool operated adjustable mounting means. 3,846,597, Cl. 200-38.0ba.

Ziegler, William H., to United States of America, Army. Digital fluidic circuit with adjustable time delay means for output control. 3,845,690, Cl. 91-35.000.

Ziff, Louis J., to Larami Corporation. Bubble blowing device. 3,845,583, Cl. 46-7.000.

Zimmer, George A.; and Struttmann, Hilarius S., to Borg-Warner Corporation. Bearing assembly. 3,845,999, Cl. 308-194.000.

Zimmerhackel, Franz: *See*—
Meuresch, Herbert; and Zimmerhackel, Franz, 3,845,887.

Zimmerman, Gilbert A.; and Sherman, Marshall L., to Aerojet-General Corporation. Composite polyurethane propellants with negative pressure exponent of ammonium sulfate. 3,846,195, Cl. 149-19.400.

Zoller, Henry, to Molnlycke, AB. Cup-shaped device for the collection of menstrual fluids and intended for internal use. 3,845,766, Cl. 128-285.000.

Zorn, Hugo; Broll, Helmut; and Reckziegel, Erich, to Agfa-Gevaert Aktiengesellschaft. Multilayered color photographic material with improved stability under tropical conditions. 3,846,133, Cl. 96-74.000.

Zuriff, Lee S.: *See*—
Kronish, Donald P.; Zuriff, Lee S.; Young, William D.; and Lewandowski, Paul R., 3,846,247.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bahl, Lalit R., D. I. Barnea, and H. Kobayashi, to International Business Machines Corp. Sequential learning predictor for an image compression system. T928,003, 11–5–74, Cl. 235—154.

Barnea, Daniel I.: *See*—
Bahl, Lalit R., Barnea, and Kobayashi. T928,003.

Blackwell, Samuel E. Process for imparting flame retardance to polyester fibers. T928,001, 11–5–74, Cl. 8—17.

Cabbiness, Dale K., and G. J. Hanggi, to Continental Oil Co. Optical bench for a stable source of radiation. T928,005, 11–5–74, Cl. 356—256.

Carpenter, Robert G., E. Lindbloom, and M. T. McMahon, Jr., to International Business Machines Corp. System for reducing the number of increments in a bilevel electrical signal test pattern for non-linear circuits. T928,004, 11–5–74, Cl. 235—151.3.

Continental Oil Co.: *See*—
Cabbiness, Dale K., and Hanggi. T928,005.

Delling, David R., and J. V. Wiseman, to Stauffer Chemical Co. Process for producing crystalline anhydrous sodium carbonate. T928,002, 11–5–74, Cl. 23—302.

Hanggi, George J.: *See*—
Cabbiness, Dale K., and Hanggi. T928,005.

Imperial Chemical Industries Ltd.: *See*—
Leslie, Victor J. T928,006.

International Business Machines Corp.: *See*—
Bahl, Lalit R., Barnea, and Kobayashi. T928,003.
Carpenter, Robert G., Lindbloom, and McMahon, Jr. T928,004.

Kobayashi, Hisashi: *See*—
Bahl, Lalit R., Barnea, and Kobayashi. T928,003.

Leslie, Victor J., to Imperial Chemical Industries Ltd. Silencers. T928,006, 11–5–74, Cl. 117—97.

Lindbloom, Eric: *See*—
Carpenter, Robert G., Lindbloom, and McMahon, Jr. T928,004.

McMahon, Maurice T., Jr.: *See*—
Carpenter, Robert G., Lindbloom, and McMahon, Jr. T928,004.

Stauffer Chemical Co.: *See*—
Delling, David R., and Wiseman. T928,002.

Wiseman, James V.: *See*—
Delling, David R., and Wiseman. T928,002.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF NOVEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bassett, Max; H. W. Olsen, deceased, by M. M. Olsen, executrix, to C. Nelson Shields, Jr. Methods of grouting offshore structures. Re. 28,232, 10–22–74, Cl. 61—46.

Benghiat, Ralph, to The Riley Co. Priority interrupt monitoring system. Re. 28,221, 11–5–74, Cl. 340—172.5.

Bertrand, Guy, and J. M. Maison, to Rhone-Poulenc S.A. N-nitroso-4,4'-bis(2-phenylisopropyl)-diphenylamine. Re. 28,234, 11–5–74, Cl. 260—570.

Cook, F. W., & Associates, Inc.: *See*—
Cook, Franklin W. Re. 28,226.

Cook, Franklin W., to F. W. Cook & Associates, Inc. Circulating air dryer. Re. 28,226, 11–5–74, Cl. 34—191.

Eastman Kodak Co.: *See*—
Heseltine, Donald W., Jenkins, and Mee. Re. 28,225.

Elders, Gerald W., to Lee-Norse Co. Mine roof pins and apparatus for setting the same. Re. 28,227, 11–5–74, Cl. 85—10.

Faust, John A., and M. Sahyun; said Faust assignor to said Sahyun, d.b.a. Sahyun Laboratories. Beta-alkoxy-trifluoromethylphenalkylamines. Re. 28,229, 11–5–74, Cl. 424—330.

Glastrusions, Inc.: *See*—
Goldsworthy, William B. Re. 28,233.

Goldsworthy, William B., to Glastrusions, Inc. Augmented curing of reinforced plastic stock. Re. 28,233, 11–5–74, Cl. 156—380.

Graham, Donald P., to Hercules, Inc. Booster cap assembly. Re. 28,228, 11–5–74, Cl. 102—24.

Hashizume, George K.: *See*—
Odenthal, Conrad J., and Hashizume. Re. 28,223.

Hercules, Inc.: *See*—
Graham, Donald P. Re. 28,228.

Heseltine, Donald W., P. W. Jenkins, and J. D. Mee, to Eastman Kodak Co. Photobleachable dye composition. Re. 28,225, 11–5–74, Cl. 96—27.

Horstkorta, Donald A.: *See*—
Stosberg, Arturo E., and Horstkorta. Re. 28,231.

Illinois Tool Works Inc.: *See*—
Rayburn, Charles C. Re. 28,230.

Jenkins, Philip W.: *See*—
Heseltine, Donald W., Jenkins, and Mee. Re. 28,225.

Lee-Norse Co.: *See*—
Elders, Gerald W. Re. 28,227.

Machein, Kurt R.: *See*—
Stosberg, Arturo E., and Horstkorta. Re. 28,231.

Maison, Jean M.: *See*—
Bertrand, Guy, and Maison. Re. 28,234.

Mee, John D.: *See*—
Heseltine, Donald W., Jenkins, and Mee. Re. 28,225.

Metcalf, Michael H., to Tektronix, Inc. Transistor matrix. Re. 28,224, 11–5–74, Cl. 340—166.

Odenthal, Conrad J., and G. K. Hashizume, to Tektronix, Inc. Electron beam deflection apparatus. Re. 28,223, 11–5–74, Cl. 315—3.

Olsen, Horace W.: *See*—
Bassett, Max, Olsen, and Shields Jr. Re. 28,232.

Olsen, Magdalene M.: *See*—
Bassett, Max, Olsen, and Shields Jr. Re. 28,232.

Rayburn, Charles C., to Illinois Tool Works Inc. Method of making a miniature metalized capacitor. Re. 28,230, 11–5–74, Cl. 29—25.42.

Rhone-Poulenc S.A.: *See*—
Bertrand, Guy, and Maison. Re. 28,234.

Riley Co., The: *See*—
Benghiat, Ralph. Re. 28,221.

Sahyun Laboratories: *See*—
Faust, John A., and Sahyun. Re. 28,229.

Sahyun, Melville: *See*—
Faust, John A., and Sahyun. Re. 28,229.

Shields, C. Nelson, Jr.: *See*—
Bassett, Max, Olsen, and Shields Jr. Re. 28,232.

Stosberg, Arturo E., and D. A. Horstkorta, to Kurt R. Machein. Single picture selector system. Re. 28,231, 8–13–68, Cl. 360—35.

Tektronix, Inc.: *See*—
Metcalf, Michael H. Re. 28,224.
Odenthal, Conrad J., and Hashizume. Re. 28,223.

Wycoff, Keith H. Communication receiver incorporating tone operated pulser circuit and electronic switch. Re. 28,222, 11–5–74, Cl. 325—492.

LIST OF PLANT PATENTEES

Cole Nursery Co., Inc.: *See*—
Ross, Henry A. 3,644.

Howard, Grady, Jr., assignor of a fractional part interest to J and L Plants, Inc., d.b.a. Howard Greenhouses. Kalanchoe plant. 3,645, 11–5–74, Cl. 68.

Irwin, James T., to J and L Plants, Inc. Kalanchoe plant. 3,646, 11–5–74, Cl. 68.

J and L Plants, Inc.: *See*—
Howard, Grady, Jr. 3,645.
Irwin, James T. 3,646.

Ross, Henry A., to Cole Nursery Co., Inc. Flowering crabapple tree. 3,644, 11–5–74, Cl. 34.

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Alaska, St. Barth. Sunglasses. 233,560, 11–5–74, Cl. D57—1.
Almac Enterprises, Inc.: *See*—
Zelkowitz, Philip. 233,497.
Aslesen, Donald M.: *See*—
Ocel, Donald J., J. J., S. F., and Aslesen. 23,533.
Bailey, Robert A. Belt attachable flash light holder. 233,490, 11–5–74, Cl. D2—400.
Baker, John B. Safety flag for a bicycle. 233,510, 11–5–74, Cl. D10—109.
Beadle, Raymond G. Automobile overtire. 233,516, 11–5–74, Cl. D12—154.
Beldarrain, Francisco, to Orbaiceta, S.A. Portable heater. 233,524, 11–5–74, Cl. D23—123.
Bell Telephone Laboratories, Inc.: *See*—
Chen, Paul E., Manganello, and Sylvester. 233,519.
Bierbusse, James H., to Uniroyal, Inc. Pneumatic tire tread and buttress. 233,515, 11–5–74, Cl. D12—143.
Bolyos, Imre. Armchair. 233,494, 11–5–74, Cl. D6—69.
Britt, David L.: *See*—
Lyons, Paul A., Burks, and Britt. 233,568.
Burks, Nathaniel W., Jr.: *See*—
Lyons, Paul A., Burks, and Britt. 233,568.
Chen, Paul E., J. C. Manganello, and G. E. Sylvester, to Bell Telephone Laboratories, Inc. Ornamental design for a building. 233,519, 11–5–74, Cl. D13—1.
Chevron Research Co.: *See*—
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Christiansen, Godtfred K., to Interlego A.G. Toy assembly element. 233,542, 11–5–74, Cl. D34—15.
Christiansen, Godtfred K., to Interlego A.G. Toy assembly element. 233,543, 11–5–74, Cl. D34—15.
Christoffel, Julius M., Jr., to Gayla Industries, Inc. Kite. 233,544, 11–5–74, Cl. D34—15.
Colibri Lighters Ltd.: *See*—
Lowenthal, Hans. 233,526.
Condon, Charles V., G. E. Moore, and J. Larson, to Watson Mfg. Medicine dispensing cabinet and similar article. 233,511, 11–5–74, Cl. D12—28.
Corkill, Gary D. Locking bicycle stand. 233,513, 11–5–74, Cl. D12—115.
Curry, Joyce, and M. G. Pugh. Ensemble including blouse and panty. 233,489, 11–5–74, Cl. D2—29.
Design Properties, Inc.: *See*—
Foley, Dennis J., and Gilmore. 233,566.
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Echterling, Eugene J., to Questor Corp. Dog figure toy ball. 233,539, 11–5–74, Cl. D34—15.
Estes, David R., to Velo-Bind, Inc. Machine for binding books. 233,559, 11–5–74, Cl. D55—1.
Flamagas S.A.: *See*—
Gili, Ricardo A. 233,527.
Foley, Dennis J., and R. A. Gilmore, to Design Properties, Inc. Highway communications standard. 233,566, 11–5–74, Cl. D72—1.
Frick, Berndt E. Sound reducing cover for a typewriter, teleprinter or the like. 233,564, 11–5–74, Cl. D64—11.
Frick, Berndt E. Sound reducing cover for typewriter, teleprinter or the like. 233,565, 11–5–74, Cl. D64—11.
Frontier Contact Lenses of Florida, Inc.: *See*—
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Girvin, Robert H. Motorcycle rack. 233,517, 11–5–74, Cl. D12—158.
Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Cigarette lighter. 233,530, 11–5–74, Cl. D27—42.
Hanley, Hope. Implement for interweaving braid. 233,491, 11–5–74, Cl. D3—19.
Herold, Don C. Polo goal. 233,536, 11–5–74, Cl. D34—5.
Hetherington, James E., and J. H. Zelina. Fluorescent lantern. 233,550, 11–5–74, Cl. D48—24.
Hines, Norma: *See*—
Laterra, Salvatore. 233,495.
Hoffmann, Hans, to Telesco Brophey Ltd. Umbrella handle. 233,570, 11–5–74, Cl. D88—3.
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Hunt, John D., to RCA Corp. Bagger station or similar article. 233,496, 11–5–74, Cl. D6—143.
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Jordan, Anthony. Grease filter. 233,525, 11–5–74, Cl. D23—149.
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CLASS 178

19 3,846,580
33R 3,846,581
58R 3,846,582
67 3,846,583
69.5TV 3,846,584

CLASS 179

15A 3,846,586
15T 3,846,585
15AL 3,846,587
15FE 3,846,588
98 3,846,589
3,846,590
100.1A 3,846,591
100.41K 3,846,592
175.3R 3,846,593
179 3,846,594

CLASS 180

8F 3,845,831
14R 3,845,832
29 3,845,833
33A 3,845,834
54R 3,845,841
65R 3,845,835
82C 3,845,836

CLASS 181

33K 3,845,839
36R 3,845,840
106 3,845,837
129 3,845,838

CLASS 187

15 3,845,842
29R 3,845,843

CLASS 188

32 3,845,844
3,845,845
112 3,845,846

CLASS 191

3 3,846,595

CLASS 192

3S 3,845,847

CLASS 194

13 3,845,848
97R 3,845,849

CLASS 195

1.8 3,846,236
28R 3,846,237
3,846,238
66R 3,846,239
68 3,846,240
100 3,846,241
103.5R 3,846,242
3,846,243
104 3,846,244
109 3,846,245
3,846,246
127 3,846,247
3,846,248

CLASS 196

111 3,846,249

CLASS 197

1R 3,845,850

CLASS 198

22R 3,845,851
34 3,845,852
78 3,845,853
184 3,845,854
213 3,845,855
3,845,856
220CA 3,845,857

CLASS 200

16D 3,846,596
38BA 3,846,597
51.09 3,846,598
61.89 3,846,599
83S 3,846,600
148B 3,846,601
148E 3,846,602
157 3,846,603
168D 3,846,604
316 3,846,605

CLASS 201

39 3,846,250

CLASS 202

234 3,846,251
262 3,846,252

CLASS 203

7 3,846,253
11 3,846,254
18 3,846,255
33 3,846,256

CLASS 204

1T 3,846,257
15 3,846,258
3,846,259
25 3,846,260
56R 3,846,261
129.6 3,846,262
129.65 3,846,263
158R 3,846,264
159.12 3,846,265
159.17 3,846,267
159.2 3,846,266
163HE 3,846,268
181 3,846,269
192 3,846,294
195T 3,846,270
213 3,846,271
219 3,846,272
290F 3,846,273
299 3,846,274

CLASS 206

233 3,845,858
320 3,845,859
338 3,845,860
523 3,845,861

CLASS 208

10 3,846,275
11 3,846,276
31 3,846,277
57 3,846,278
93 3,846,279
120 3,846,280
139 3,846,281
3,846,282
216 3,846,284
3,846,285
3,846,286
3,846,287
263 3,846,288

CLASS 209

166 3,845,862
303 3,845,863

CLASS 210

8 3,846,289
11 3,846,290
14 3,846,291
3,846,292
18 3,846,293
23 3,846,295
27 3,846,296
31C 3,846,297
33 3,846,298
44 3,846,299
47 3,846,300
60 3,846,301
71 3,846,302
73 3,846,303
80 3,846,304
150 3,846,305
198C 3,846,306
323 3,846,307
331 3,846,308
370 3,846,309
471 3,846,320
512 3,846,321

CLASS 211

153 3,845,864

CLASS 212

57 3,845,865
64 3,845,866
65 3,845,869

CLASS 213

121 3,845,867

CLASS 214

42R 3,845,868
145 3,845,870
3,845,871

CLASS 215

9 3,845,872
13R 3,845,873
214 3,845,874

CLASS 219

10.55 3,846,606
3,846,607
3,846,608
10.79 3,846,609
61 3,846,610
69E 3,846,611
121LM 3,846,612
145 3,846,613
302 3,846,614
333 3,846,615
365 3,846,616
370 3,846,617
373 3,846,618
532 3,846,619
543 3,846,620
550 3,846,621

CLASS 220

20 3,845,875
86R 3,845,877
89A 3,845,878
3,845,879
203 3,845,876
258 3,845,880

CLASS 221

144 3,845,881
279 3,845,882

CLASS 222

30 3,845,883
173 3,845,884
176 3,845,885
241 3,845,886
402.16 3,845,887
402.24 3,845,888

CLASS 224

16 3,845,889
36 3,845,892
42.1C 3,845,890
42.21 3,845,891

CLASS 225

1 3,845,893
25 3,845,894
93.5 3,845,895

CLASS 229

2.5 3,845,896
16R 3,845,897
28R 3,845,898

CLASS 234

1 3,846,718

CLASS 235

61.11E 3,846,623
61.7B 3,846,622
92C 3,845,899
102 3,845,900
144E 3,846,624
151.1 3,846,706
152 3,846,625
153BK 3,846,626

CLASS 239

102 3,845,901
314 3,845,902
406 3,845,903
410 3,845,904

CLASS 240

62.2 3,846,627

CLASS 241

26 3,845,905
32 3,845,906
36 3,845,907
46.11 3,845,908
65 3,845,909
245 3,845,910

CLASS 242

18DD 3,845,911
18R 3,845,912
25R 3,845,913
56R 3,845,914
68.4 3,845,915
197 3,845,916

CLASS 244

3.28 3,845,922
17.27 3,845,917
41 3,845,918
103R 3,845,919
137P 3,845,920
158 3,845,921

CLASS 248

3 3,845,923
22 3,845,924
27 3,845,925
162 3,845,926
223 3,845,927
291 3,845,928
358R 3,845,929

CLASS 249

29 3,845,930

CLASS 250

201 3,846,628
3,846,629
207 3,846,630
269 3,846,631
312 3,846,632
402 3,846,633
476 3,846,634
480 3,846,635
499 3,846,636
546 3,846,637

CLASS 251

11 3,845,931
63.4 3,845,932

CLASS 252

8.55B 3,846,311
8.55R 3,846,310
13 3,846,312
18 3,846,313
3,846,314
3,846,315
33 3,846,316
46.7 3,846,317
47.5 3,846,318
49.5 3,846,319
62.62 3,846,322
62.63 3,846,323
95 3,846,324
99 3,846,325
107 3,846,326
170 3,846,327
301.6S 3,846,328
358 3,846,329
361 3,846,330
364 3,846,331
3,846,332
408 3,846,333
414 3,846,334
428 3,846,335
435 3,846,336
437 3,846,337
3,846,338
438 3,846,339
455R 3,846,340
462 3,846,341
465 3,846,342
466PT 3,846,343
466J 3,846,344
514 3,846,345
527 3,846,346

CLASS 254

8R 3,845,933
105 3,845,934
110 3,845,935

CLASS 256

1 3,845,936

CLASS 258

1.8 3,845,937

CLASS 259

8 3,845,938
10 3,845,939
107 3,845,940
157 3,845,941

CLASS 260

2.5AF 3,846,347
2.5AJ 3,846,348
2.5AM 3,846,351
2.5HA 3,846,349
2.5H 3,846,350
5 3,846,352
9 3,846,353
17.4ST 3,846,354
18EP 3,846,356
18TN 3,846,355
18N 3,846,357
18S 3,846,358
22S 3,846,359
23.7R 3,846,360
28.5AS 3,846,362
28.5D 3,846,361
29.6BM 3,846,363
33.6AQ 3,846,365
33.6UB 3,846,364
37EP 3,846,366
37N 3,846,367
39SB 3,846,453
39R 3,846,368
40R 3,846,369
42.33 3,846,371
42.36 3,846,370
45.75R 3,846,372
45.95G 3,846,373
61 3,846,375
3,846,376
75T 3,846,377
77.5TB 3,846,378
78A 3,846,380
78R 3,846,381
78S 3,846,379
78.3R 3,846,382
78.5R 3,846,383
80.3E 3,846,384
80.7 3,846,385
80.72 3,846,386
80.78 3,846,387
82.1 3,846,388
83.5 3,846,389
86.3 3,846,390
87.3 3,846,391
88.7R 3,846,833
93.1 3,846,392
93.5A 3,846,393
93.7 3,846,394
94.9GA 3,846,396
94.9GC 3,846,395
112R 3,846,397
112.5 3,846,398
3,846,399
3,846,400
211.5R 3,846,401
3,846,402
227 3,846,403
230 3,846,404
233.3R 3,846,405
239BB 3,846,408
239D 3,846,409
239.1 3,846,406
3,846,407
239.3D 3,846,410
239.5 3,846,411
240G 3,846,412
3,846,413
3,846,414
3,846,415
243C 3,846,416
3,846,417
244R 3,846,418
247 3,846,419
247.2A 3,846,420
248CS 3,846,421
248NS 3,846,422
248A 3,846,423
250QN 3,846,424
252 3,846,425
256.4C 3,846,426
256.4Q 3,846,427
260 3,846,428
268PH 3,846,429
268TR 3,846,430
283S 3,846,431
285.5 3,846,432
287R 3,846,433
290P 3,846,434
293.82 3,846,435
294.8C 3,846,436
302SD 3,846,437
307A 3,846,438
3,846,439
309.5 3,846,440
3,846,441
309.7 3,846,442
310A 3,846,443
315 3,846,444
326.47 3,846,445
326.9 3,846,446
327E 3,846,447
327M 3,846,448
340.2 3,846,449
343.4 3,846,450
348A 3,846,452
396R 3,846,453
397.2 3,846,454
397.3 3,846,455
398.5 3,846,456
404 3,846,457
429.7 3,846,458
438.1 3,846,459
439R 3,846,460
448.2E 3,846,461
448.2N 3,846,462
448.8R 3,846,463
453R 3,846,465
455A 3,846,466
3,846,467
463 3,846,468
3,846,469
465C 3,846,473
465E 3,846,470
465.8R 3,846,471
3,846,474
465.9 3,846,472
468D 3,846,475
471C 3,846,476
482C 3,846,477
484A 3,846,479
484R 3,846,478
485G 3,846,480
501.1 3,846,481
502.4P 3,846,482
3,846,483
514.5 3,846,484
515R 3,846,485
519 3,846,486
524R 3,846,487
526N 3,846,488
534C 3,846,489
534R 3,846,490
551P 3,846,374
552R 3,846,491
558R 3,846,492
561N 3,846,493
3,846,495
561R 3,846,494
570R Re.28,234
570.7 3,846,496
592 3,846,497
3,846,498
610B 3,846,499
611A 3,846,500
613D 3,846,501
614F 3,846,502
666P 3,846,503
3,846,504
683.45 3,846,505
825 3,846,506
857TW 3,846,507
859R 3,846,508
876R 3,846,509
3,846,510
880R 3,846,511
938 3,846,514
943 3,846,512
960 3,846,513

CLASS 261

18B 3,846,515
87 3,846,516
91 3,846,517
123 3,846,518
151 3,846,519

CLASS 264

.5 3,846,520

22 3,846,521
25 3,846,522
41 3,846,523
45.3 3,846,524
46.5 3,846,525
46.8 3,846,526
63 3,846,527
85 3,846,528
142 3,846,529
154 3,846,530
161 3,846,531
210F 3,846,532
225 3,846,533
3,846,534

CLASS 266

23K 3,845,942
38 3,845,943

CLASS 269

48.1 3,845,944
323 3,845,945
3,845,946
324 3,845,947

CLASS 270

40 3,845,948

CLASS 271

64 3,845,949
194 3,845,950
243 3,845,951

CLASS 272

1E 3,845,952

CLASS 273

29A 3,845,953
75 3,845,954
77A 3,845,955
85F 3,845,956
101 3,845,957
135D 3,845,958
153S 3,845,959
171 3,845,960

CLASS 277

212F 3,845,961

CLASS 279

1J 3,845,962
89 3,845,963

CLASS 280

11.35C 3,845,965
11.35K 3,845,964
11.35T 3,845,966
14 3,845,967
36C 3,845,968
47.13 3,845,969
150AB 3,845,970
3,845,971

CLASS 285

24 3,845,972
26 3,845,973
47 3,845,974
283 3,845,975

CLASS 292

158 3,845,976

CLASS 293

19 3,845,977

CLASS 294

83R 3,845,978
88 3,845,979

CLASS 296

23R 3,845,980
28C 3,845,981
65A 3,845,982
84 3,845,983

CLASS 297

56 3,845,984
184 3,845,985
239 3,845,986

385 3,845,987
440 3,845,988

CLASS 299

13 3,845,989

CLASS 302

15 3,845,990

CLASS 303

3 3,845,991
21F 3,845,992

CLASS 307

3 3,846,638
9 3,846,639
10AT 3,846,640
41 3,846,641
239 3,846,642
247R 3,846,643
252J 3,846,644
260 3,846,645
268 3,846,646
273 3,846,647
293 3,846,648

CLASS 308

3.6 3,846,001
6 3,845,993
8.2 3,845,994
10 3,845,995
3,845,996
3,845,997
36.1 3,845,998
194 3,845,999
238 3,846,000

CLASS 310

8 3,846,649
8.2 3,846,650
61 3,846,651
90 3,846,652
102 3,846,653

CLASS 312

107 3,846,002
204 3,846,003
209 3,846,004
248 3,846,005

CLASS 313

94 3,846,654
118 3,846,655
188 3,846,656
195 3,846,657
408 3,846,658
411 3,846,659
421 3,846,660
491 3,846,661
496 3,846,662

CLASS 315

3 Re.28,223
3,846,663
3.6 3,846,664
5.43 3,846,665
27TD 3,846,666
39.53 3,846,667
111 3,846,668
169TV 3,846,670
169R 3,846,669
291 3,846,671
312 3,846,672
400 3,846,673

CLASS 316

26 3,846,006

CLASS 317

13C 3,846,674
33SC 3,846,676
33R 3,846,675
107 3,846,677
120 3,846,678
132 3,846,679

CLASS 318

115 3,846,681
138 3,846,682
221H 3,846,683
257 3,846,684
327 3,846,685
349 3,846,686
446 3,846,687
490 3,846,688
571 3,846,689
685 3,846,680

CLASS 320

1 3,846,690

CLASS 321

2 3,846,691
8R 3,846,692
12 3,846,693
18 3,846,694
27R 3,846,695

CLASS 323

1 3,846,696

CLASS 324

34GT 3,846,697
51 3,846,698
57R 3,846,699
72 3,846,700
175 3,846,701
186 3,846,702

CLASS 325

53 3,846,703
66 3,846,704
141 3,846,705
334 3,846,707
492 Re.28,222

CLASS 329

104 3,846,708

CLASS 330

4.3 3,846,709
11 3,846,710
29 3,846,711
30D 3,846,712
192 3,846,713

CLASS 331

94.5 3,846,715
3,846,716
107G 3,846,714

CLASS 332

52 3,846,717

CLASS 333

14 3,846,719
22R 3,846,720
26 3,846,721
72 3,846,722
3,846,723
81R 3,846,724

CLASS 336

92 3,846,725

CLASS 337

107 3,846,726
159 3,846,728
246 3,846,727
343 3,846,729

CLASS 338

34 3,846,730
127 3,846,731
133 3,846,732
3,846,733

CLASS 339

17CF 3,846,734
47 3,846,735
126RS 3,846,736
174 3,846,737
177R 3,846,738
198J 3,846,739
220R 3,846,740
221R 3,846,741
263R 3,846,742
275B 3,846,743

CLASS 340

6R 3,846,745
10 3,846,744
27R 3,846,746
59 3,846,747
71 3,846,748
72 3,846,749
105 3,846,750
146.1AG 3,846,751
146.3AC 3,846,755
146.3D 3,846,753
146.3H 3,846,754
146.3Q 3,846,752
147MD 3,846,756
166R Re.28,224
3,846,757
172.5 Re.28,221
3,846,758
3,846,759
3,846,760
3,846,761
3,846,762
3,846,763
173AM 3,846,766
173DR 3,846,765
173LS 3,846,764
173R 3,846,767
3,846,768
174FB 3,846,770
174M 3,846,769
195 3,846,771
199 3,846,804
227R 3,846,772
237S 3,846,773
239R 3,846,774
244R 3,846,775
3,846,776
252R 3,846,777
258A 3,846,778
258B 3,846,779
258D 3,846,790
261 3,846,780
267R 3,846,781
274 3,846,782
311 3,846,783
336 3,846,784
347AD 3,846,786
3,846,787
347DA 3,846,785
347P 3,846,788
3,846,789
365C 3,846,791
384E 3,846,792
409 3,846,793
415 3,846,794
421 3,846,795

CLASS 343

6R 3,846,797
7.5 3,846,796
705 3,846,798
833 3,846,799

CLASS 346

1 3,846,800
74E 3,846,801
3,846,802
95 3,846,803

CLASS 350

6 3,846,007
10 3,846,008
87 3,846,009
96WG 3,846,010
117 3,846,011
128 3,846,012
147 3,846,013
160LC 3,846,014
3,846,015
302 3,846,016

CLASS 351

106 3,846,017
120 3,846,018

CLASS 354

23 3,846,805
31 3,846,806
42 3,846,807
86 3,846,808
95 3,846,809
117 3,846,810
145 3,846,811
3,846,812
213 3,846,813
226 3,846,814
234 3,846,815
307 3,846,816
319 3,846,817
324 3,846,818

CLASS 355

3R 3,846,019
3,846,020
16 3,846,021
53 3,846,022

CLASS 356

21 3,846,023
80 3,846,024
106LR 3,846,025
152 3,846,026
188 3,846,027
218 3,846,028

CLASS 357

23 3,846,822
31 3,846,820
35 3,846,821
74 3,846,823
80 3,846,824
81 3,846,825

CLASS 358

47 3,846,579
81 3,846,826

CLASS 360

19 3,846,819
26 3,846,827
35 Re.28,231
46 3,846,829
56 3,846,830
74 3,846,831
85 3,846,832
93 3,846,834
98 3,846,835
3,846,836
99 3,846,837
106 3,846,838
108 3,846,839
118 3,846,840
121 3,846,841
126 3,846,842
132 3,846,828
135 3,846,843

CLASS 401

96 3,846,029

CLASS 403

2 3,846,030
28 3,846,031
140 3,846,032
220 3,846,033
351 3,846,034

CLASS 404

75 3,846,036
84 3,846,035
117 3,846,037

CLASS 415

1 3,846,038
206 3,846,039
219C 3,846,040

CLASS 416

97 3,846,041
110 3,846,042
183 3,846,043
199 3,846,044
230 3,846,045

CLASS 417

54 3,846,046
234 3,846,047
393 3,846,048
404 3,846,049
420 3,846,050

CLASS 418

61B 3,846,051
84 3,846,052
94 3,846,053
124 3,846,055

CLASS 423

183 3,846,538
242 3,846,535
244 3,846,536
338 3,846,537
574 3,846,539
628 3,846,540

CLASS 424

63 3,846,550
79 3,846,541
81 3,846,542
89 3,846,543
95 3,846,544
143 3,846,545
170 3,846,546
180 3,846,551
200 3,846,547
216 3,846,552
227 3,846,548
250 3,846,549
263 3,846,553
272 3,846,554
300 3,846,555
330 Re.28,229
364 3,846,556

CLASS 425

38 3,846,058
110 3,846,054
154 3,846,056
207 3,846,057
381.2 3,846,059
458 3,846,060

CLASS 426

1 3,846,557
2 3,846,558
3,846,559
18 3,846,560
19 3,846,561
44 3,846,562
158 3,846,563
182 3,846,573
212 3,846,564
238 3,846,565
250 3,846,566
289 3,846,567
364 3,846,568
394 3,846,569
399 3,846,570
415 3,846,571
429 3,846,572

CLASS 431

1 3,845,582
79 3,846,061
116 3,846,062
255 3,846,063
285 3,846,064
347 3,846,065
351 3,846,066

CLASS 432

80 3,846,067
251 3,846,068

CLASSIFICATION OF DESIGNS

D2— 29 233,489
400 233,490
D3— 19A 233,491
D6— 36 233,492
38 233,493
69 233,494
130 233,495
143 233,496
149 233,497
154 233,498
179 233,499
239 233,500
D7— 1 233,501
137 233,502
233,503
D8— 72 233,504
226 233,505
D9— 239 233,506
285 233,507
D10— 84 233,508
233,509
109 233,510
D12— 28 233,511
91 233,512
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Plant Patents

39	:	3,644	48	:	3,645		3,646				

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U.S. DEPARTMENT OF COMMERCE
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PATENT OFFICE
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